The IRON AGE

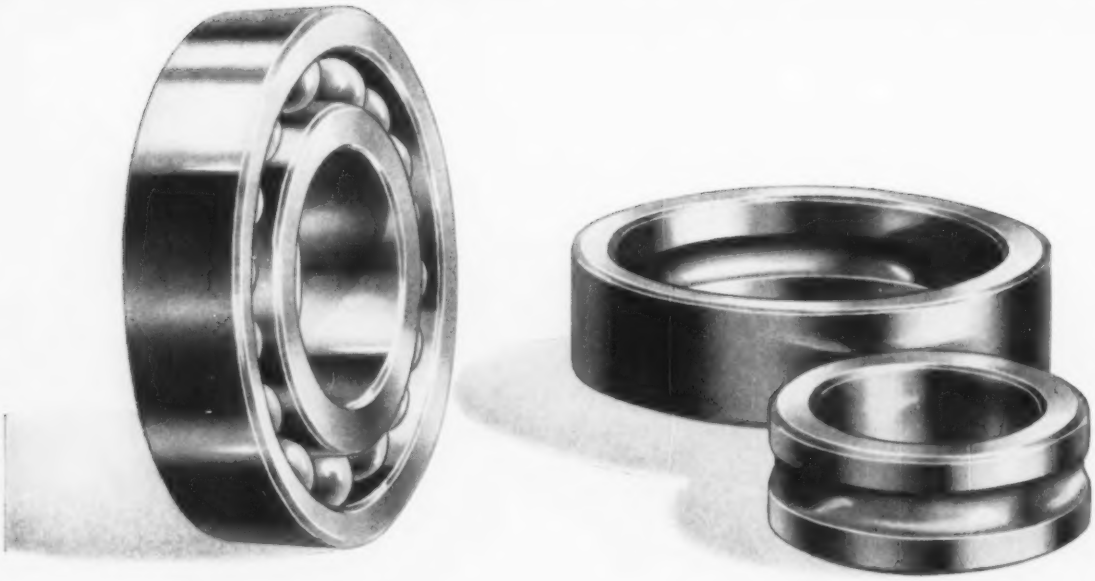
July 3, 1958 A Chilton Publication The National Metalworking Weekly

Small Engines Thrive on Leisure Markets P. 23

Why West Germany Wants Trade With Reds – P. 26

How Controls Guard Carburizing Quality – P. 61

Digest of the Week P. 2-3



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The IRON AGE

July 3, 1958—Vol. 182, No. 1

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EAST-WEST TRADE

Germans Favor It—West German industrialists see the Red threat in a different light than we do. They would like to ship most types of machine tools to Russia. They already are exchanging finished steel for pig iron. P. 26

STEELMAKING

J & L Modernizes—New installations at Cleveland and Aliquippa point out J & L's modernization program. Big features at Cleveland are punch card blooming mill and high-speed cold-reduction mill. P. 28

INDUSTRY TAXES

Reaction Sets In — Baltimore's city fathers learned that industry has a tax-breaking point. After 18 months, the city has repealed a levy on machinery and inventories. It hampered expansion. P. 29

REPORT TO MANAGEMENT

Recession History—Metalworking was the big leader in the recession. New orders stopped seven months before business activity reached its peak. Durables not only slipped first, but most. P. 39

ALUMINUM ENGINE

Drawing Closer — Automakers

Metalworking

LEISURE MARKET: These outboard motors from Johnson Motors are headed for a growing market of boat owners. These and other power units add up to a vast small engine market. It's part of the trend for powered units for work and play. P. 23

and the aluminum industry believe the all-aluminum engine is near production.

P. 40

LABOR REFORM BILL

May Die in House — Chances are slim for passage of new labor reform bill despite its approval by the Senate. It may be bottled up by hostile House labor committee headed by Rep. Barden. P. 45

FEATURE ARTICLES

QUALITY CARBURIZING

With Automatic Controls — A new fully automated carburizing and heat-treating line features dew point control to eliminate variation in carbon potential. Built to process railroad bearings, the line contains two of the largest carburizing furnaces ever built. P. 61

BELT GRINDING

Contact Wheel is Key—Contact wheels do many jobs in addition to supporting the abrasive belt. Their action and its effect on the belt have a lot to do with cutting efficiency. Right choice of wheel determines belt life and quality of finish. P. 64

OPTICAL TOOLING

For Precision Alignment — By choosing a number of optical units and accessories, a machine tool builder checks alignment of precision grinders. The simplicity of the method with its weightless line of sight adapts to production schedules. P. 67

FURNACE EXPANSION

For Super Alloys—An electric furnace, several ingot cooling furnaces, a battery of heat-treating furnaces, and the latest in testing facilities are features of a steel firm's modernization program. It's in answer to a demand for higher alloyed steels. P. 70

STAINLESS ALLOY

Solve Phase Problem—Threaded specimens of A-286 stainless have run into trouble meeting stress-rupture specifications. It's due to unwanted lamellar phase. Fortunately there are two ways of getting rid of the precipitate. P. 72

MARKETS & PRICES

TITANIUM

Comeback Coming—New alloy developed by Crucible Steel may be key to comeback of titanium. It has properties that lend themselves to missile production, indicating promising future. P. 30

WEST COAST METAL USERS

Good Sales Prospects — Here's the latest run-down on new and expanding metalworking firms in the Farwest. It's a handy aid for those selling products or services in the area. P. 47

TOOL ORDERS

Volume Is Low — Shipments continue to outstrip new orders in the machine tool business. Backlogs have sagged to less than three months. Depreciation rates add to woes. P. 49

STEEL PRICES

Up in August—It may take until August for new prices to be established. Some mills may lead off, but final levels will be set by U. S. Steel, after all factors are "clarified." P. 95

FORGINGS PRICES

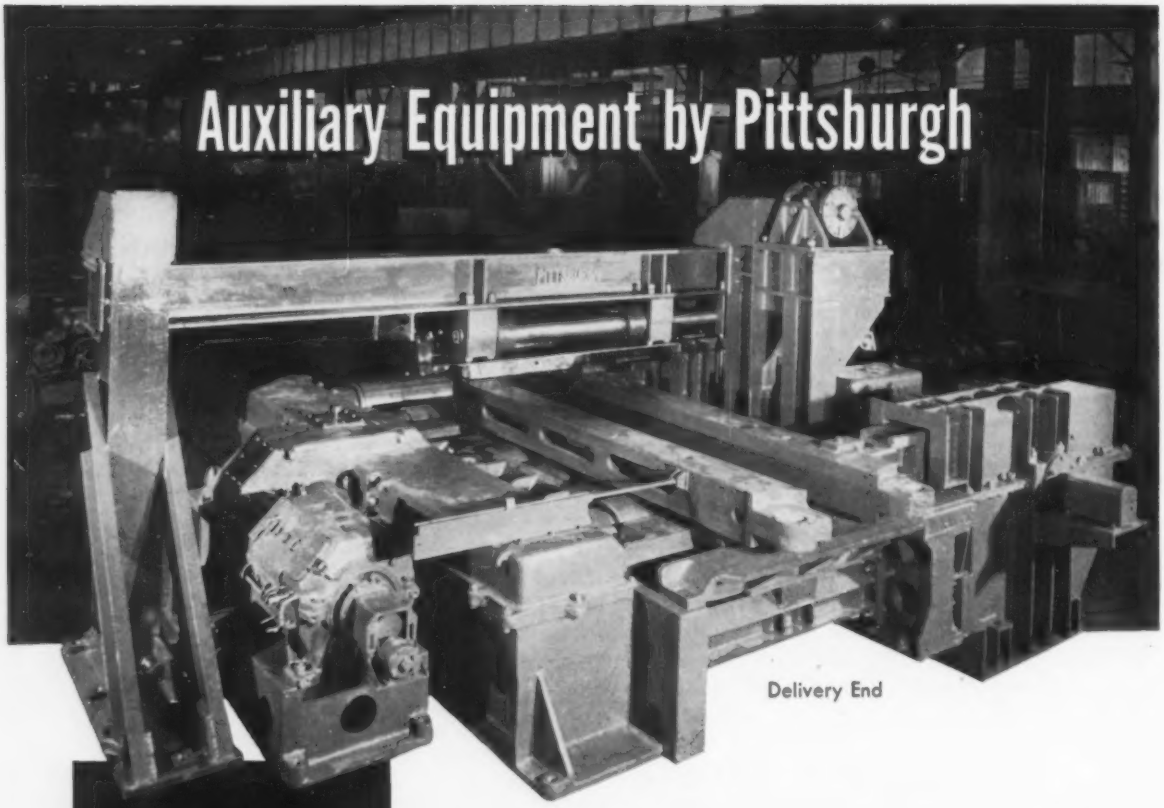
Due for a Boost — Forgings buyers should plan July purchases early because prices are expected to go up around August 1. A last minute rush to place orders may lengthen July delivery. P. 96

NEXT WEEK

MANAGEMENT COMMITTEES

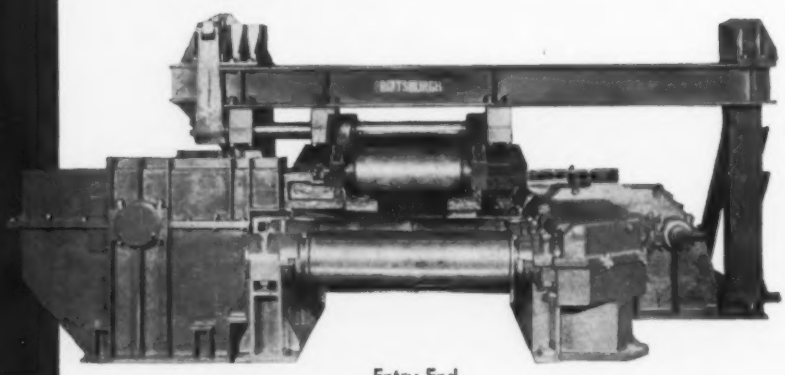
Getting Results—There is probably no managerial activity that has been the target of more abuse than the committee. Next week, D. W. Blend, of Wolverine Tube Div., Calumet & Hecla, Inc., tells how to get results from committee work.

Auxiliary Equipment by Pittsburgh



Delivery End

slab scarfer table with holddown roller and adjustable guides



Entry End

This Slab Scarfer Table is a typical example of the wide variety of auxiliary mill equipment designed and built by Pittsburgh Engineering and Machine.

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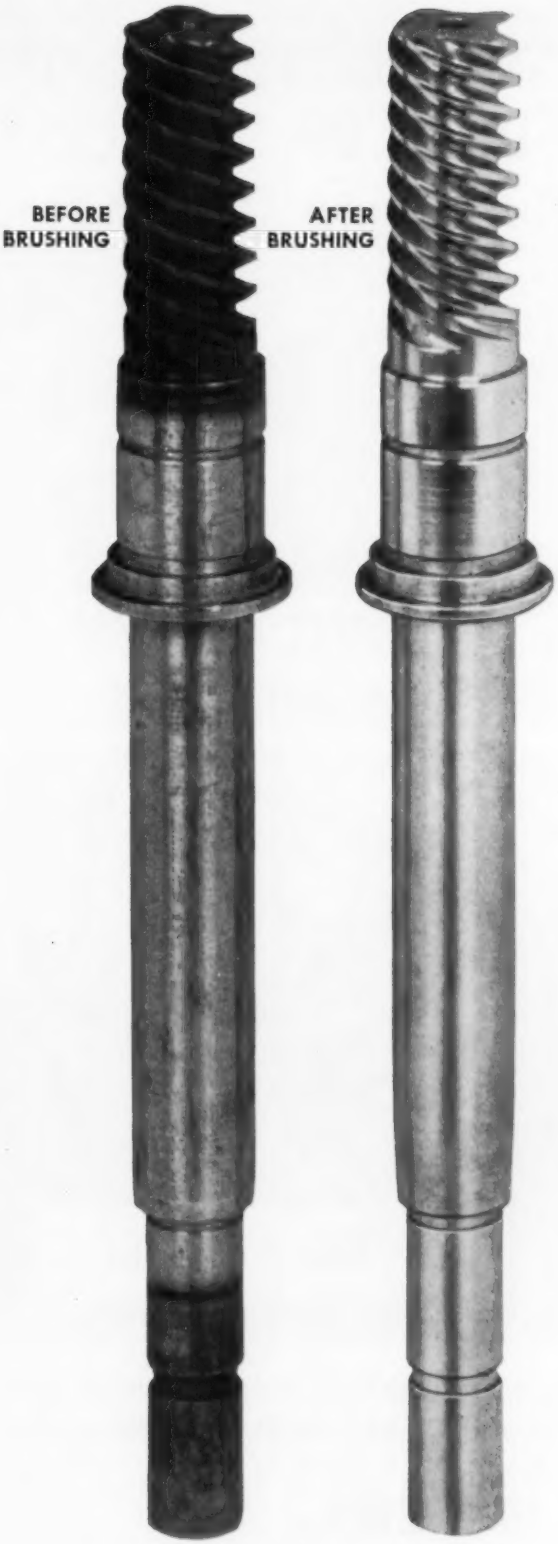

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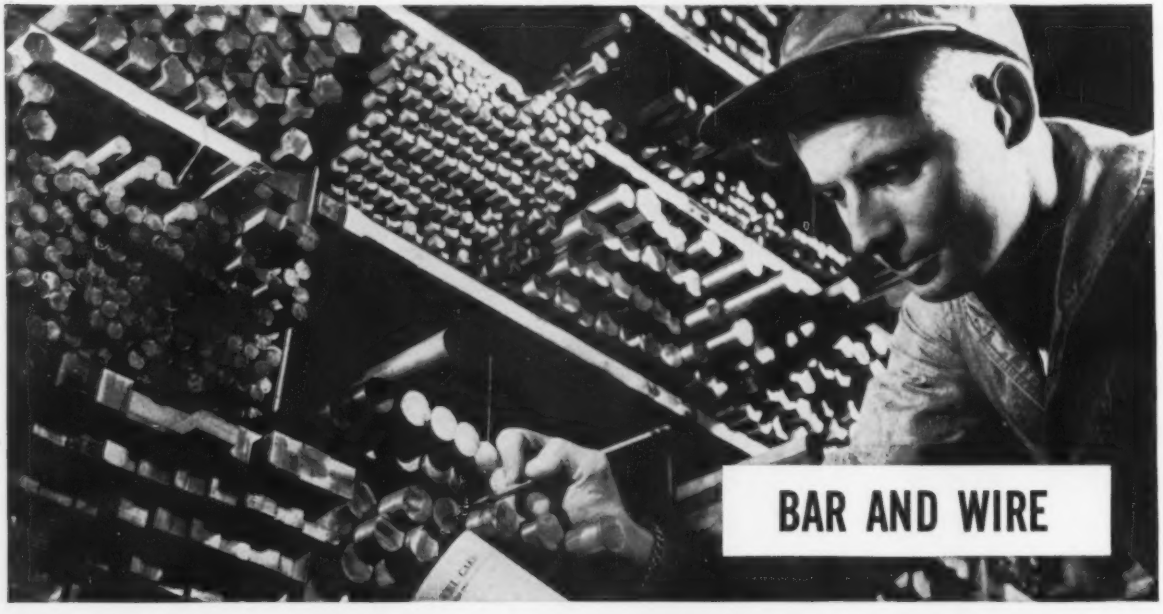

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Who Runs Business Management or Politicians?

If there were no sinners there would be no churches. So, just to get the record straight: A cross-section of business would produce the same morality as a cross-section of politicians and labor.

In recent years there is an alarming amount of near libel, smear and innuendo being aimed at business by politicians and by labor. The idea is that it is all in good clean fun with no lasting harm.

Nothing could be further from the truth. This continual industry baiting tends to undermine the public's confidence in its business leaders. The leaders themselves are often too busy trying to make a profit to realize just what a clobbering they are taking.

Take the steel price fracas. One would think the steel leaders were a bunch of cadgers who cared nothing about their responsibilities and less about their country. To listen to some politicians and labor people, steel executives are out to get all the traffic will bear and the devil take the hindmost.

That is good ammunition in a campaign or in a buildup for politicians who can't make the grade without lifting themselves by degrading others. As to its factual worth, it isn't worth a hoot.

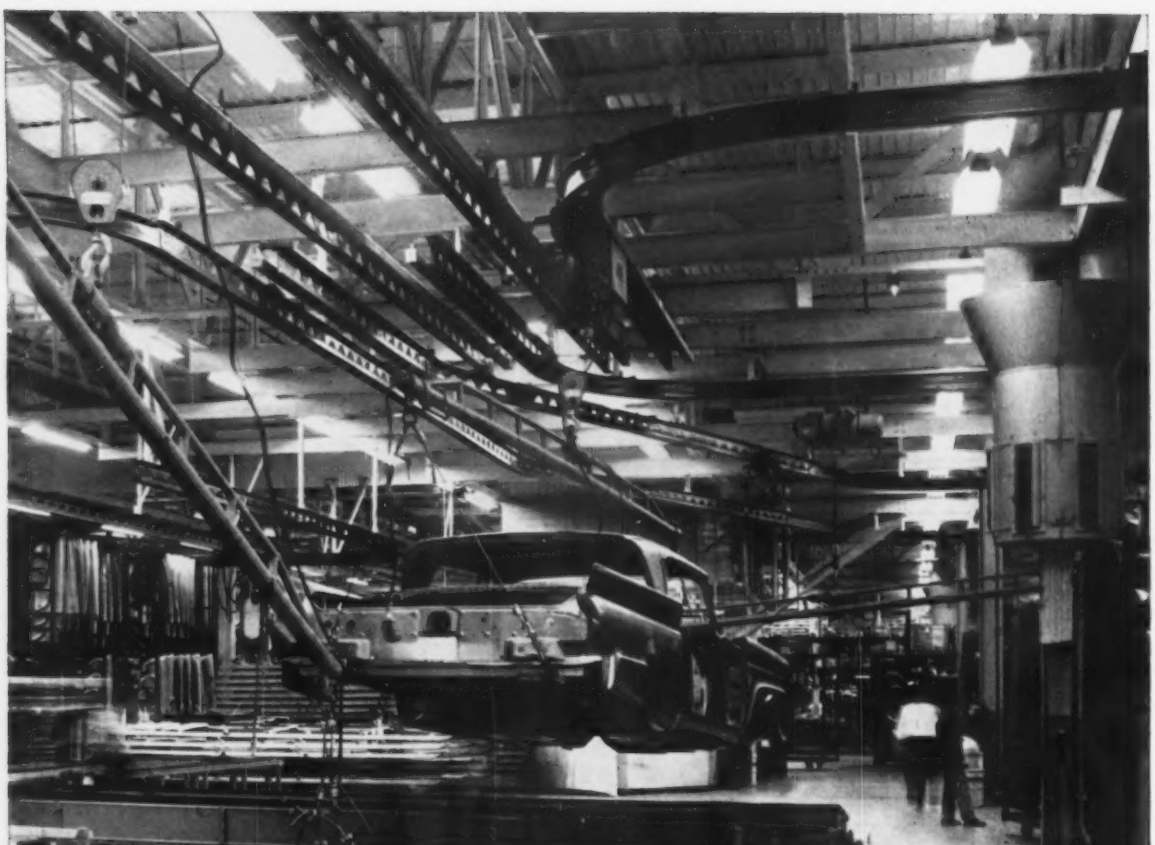
There was a time when plutocrats in steel had things their own way. That was a long, long time ago. For the past 28 years they had a tough fight to keep up with government edicts and the backbite of labor unions which have wielded such tremendous power. Steel leaders today are far from an image of the old days of the late 90's and the early 1900's. They are even a long way from the pseudo tough days of the early 20's.

The sad part of this whole mess is that wild talk by politicians and equally irresponsible talk by some labor people has brought about an "artificial" control by smear or control by "threat." Both are very subtle. Both are hard to pin down. But both are hammering home the general idea that business owes its allegiance to the "public" and to social forces instead of to customers, to the market place, to investors and to workers.

Before we go completely socialistic, thus killing private and personal initiative—which made us great—let's call a halt to this daily practice of making business a whipping boy for every political campaign—and mistake.

Tom Campbell

Editor-in-Chief



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Sir—Congratulations on your forthright and honest editorial in the June 19 issue, "Our Standard of Living: It Doesn't Answer Everything." If available, I would appreciate two additional copies of this editorial, and I will endeavor to use them to best advantage.

Also send two copies of the articles entitled, "Russia Steps Up Drive for More Capital Goods," and "U. S. Visitors Get Close Look at Russian Steel Plants."—A. W. Lisius, Controller, Vapor Blast Mfg. Co., Milwaukee, Wis.

Production Aid

Sir—Kindly send us reprint copies of two articles by Mr. R. H. Eshelman, your engineering editor. The first is entitled "Plant Modernization: Money Alone Won't Do It." The other is "Model Production Control Setup Benefits Small Firm."

Accept my gratitude for this consideration and for the many others extended me in the past on your well written and timely articles.—J. J. Schmidt, Time Standards Engr., Work Measurement Section, Ind. Eng. Dept., Remington Rand Univac, Div. of Sperry Rand Corp., St. Paul, Minn.

▪ Copies have been sent.—Ed.

About the French

Sir—Tom Campbell's editorial in the June 5 issue of IRON AGE ("Our French Lesson—Will We Learn From It?") is a timely and well written article.

The next to the last paragraph can very well be applied to many people in our nation today. It is the duty of every citizen in the U. S. A. to do all possible to prevent a "French" crisis here at home.—R. H. Larson, Vice Pres.-Mfg., Indiana Forge & Machine Co., East Chicago, Ind.

Carburizing Question

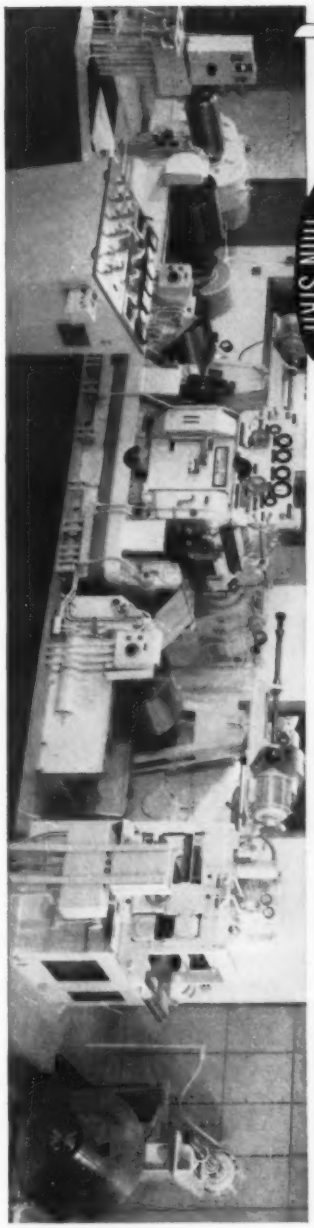
Sir—Permit me to congratulate you on the excellence of your article, "High-Temperature Carburizing Takes Half the Time" (May 22 issue).

Would you let us know the nature of the control to be used in regulating carbon potential for your future tests?

We would appreciate receiving five reprints of this article if you have them available.—A. Cohen, Metallurgical Planner, Canadian Pratt & Whitney Aircraft Co., Ltd., Jacques Cartier, P. Q., Canada.

▪ A final choice has not been decided on the type of carbon controller to be used in future experiments. Among the equipment likely to be considered are controllers manufactured by Leeds & Northrup and Surface Combustion.—Ed.

"Did you know your secretary told fibs, sir? She said you weren't in your office."



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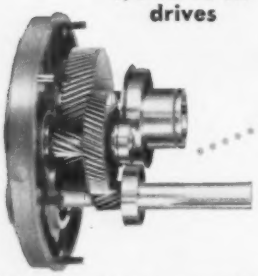

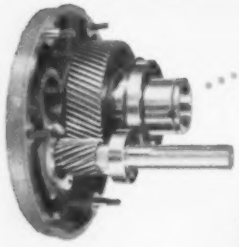

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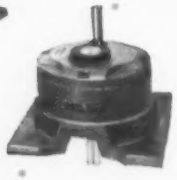
VERTICAL BASE MOUNTED



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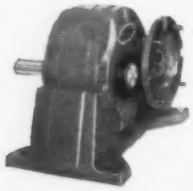

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FATIGUE CRACKS

Dusseldorf Report

Our peripatetic editor George Sullivan sends word from Europe where he's beating his way back from Siberia. Impressed with a talk at the Machine Tool Builders meeting in Chicago (April 24) about the resurgence of the German machine tool industry, he stopped, among other places, for a day at Schiess A. G. in Dusseldorf. His report:

Schiess survived the war but lost most of its plant and equipment in post-war dismantling. Result, it had to re-equip, is probably one of the world's most modern plants. Example: the firm makes gear hobbers in a 150 by 120 ft fully air-conditioned shop, now employs about 3000 in this and neighboring shops.

Schiess builds "elephant" tools, is currently assembling a planer type miller with a 150-ft long bed. The unit, destined for Switzerland, will weigh 900 tons, should take only two years from order to shipment. It has 100 motors, four TV cameras to keep the operators posted.

Best Foot Forward

Park Nameplate Co., New York, puts its own product to work for its sales force. Park's salesmen use a calling card (see photo) of colorfully anodized aluminum foil—the same product the firm sells under the trade name "Thin-plates."

Surface of the card is part of the aluminum itself and designed not to chip, peel, or smear. The metal business card is especially appropriate for firms dealing in metallic products, Park says.

Reverse side is coated with a cellophane-protected sensitive adhesive, permitting mounting of the card anywhere by purchasing agents for handy reference.

The Way It Was

In his day (about 100 years ago) Zachary U. Geiger probably wasn't an unusual brand of employer. But his office rules, as reprinted in the Ingot, employee publication of Kaiser Steel, sound rather grim today.

Here is what the sole proprietor of the Mt. Cory Carriage & Wagon Works expected of workers:

Employees will daily sweep the floors, dust the furniture, shelves, and showcases.

Each day fill lamps, clean chimneys, and trim wicks. Wash windows once a week.

Every clerk will bring in a bucket of water and a scuttle of coal for the day's business.

Make your pens carefully. You may whittle nibs to your individual taste.

Men employees will be given an evening off a week for courting purposes. Two evenings a week will be allowed if they go regularly to church.

The worth, intentions, integrity, and honesty of any employee who smokes Spanish cigars, uses liquor, gets a barber shop shave, or frequents pool halls will be suspected.

Employees who perform faithfully without fault for five years will be given an increase of five cents a day in their pay, if the return in profits from the business permits it.

Office hours are 7 am to 8 pm daily, Monday through Saturday. Closed on the Sabbath.

GET FACTS YOU SHOULD KNOW ABOUT TUBING
NEW TUBING DATA BOOK FREE!
Complete technical data for designers, plant engineers, purchasing agents. Specifications, applications, and how to order interlocked and corrugated flexible tubing, vibration absorbers, expansion joints.
It's a book you need to improve your knowledge of tubing. Yours free. Send request on company letterhead to Dept. 82, Pennsylvania Flexible Metallic Tubing Co., 7210 Powers Lane, Philadelphia, Pa.
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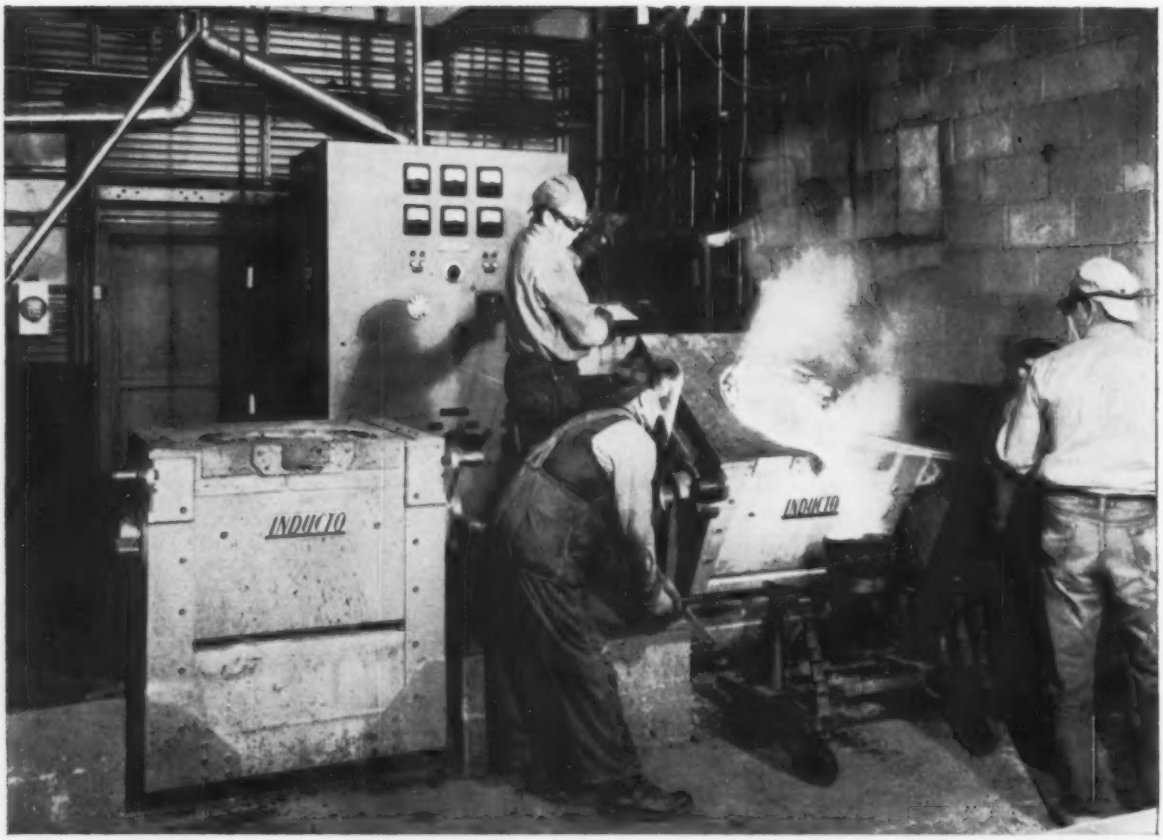
PENFLEX
TIGHT AS A PIPE BUT...
FLEXIBLE

ANOTHER INDUCTO INSTALLATION...



Waukesha Improves Stainless Castings With INDUCTO Furnaces

Waukesha Foundry Company, Waukesha, Wisconsin, is a major producer of stainless steel castings with emphasis on parts for dairy and other food equipment. To minimize rejects, Waukesha has installed Inducto induction furnaces in its stainless foundry. If you are wondering how a furnace can cut rejects in castings, consider the following facts.

Inducto high-frequency induction furnaces with precision control provide a controllable analysis on alloys. Since the heat is generated in the metal itself, there is no excess or external heat to cause oxidation of some of the alloys. The electromagnetic stirring action of the induction furnace assures a uniform, homogenous alloy. Additionally, melt after melt can be exactly duplicated by the precise control of the Inducto equipment.

At Waukesha, two 650 lb. furnaces and an Inducto Push-Out furnace (not shown) are operated from a 175 KW m-g set and controlled from a single, compact control panel. The tilting furnaces are used for stainless castings while the Push-Out, a unique removable crucible furnace, is used for hard-to-melt non-ferrous alloys.

Design-wise, too, Inducto melting equipment offers many advantages. Learn how you can benefit from the use of the most modern melting equipment available today. Write to:

INDUCTOTHERM CORPORATION
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INDUCTOTHERM
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412 Illinois Avenue • Delanco, New Jersey

COMING EXHIBITS

Western Packaging & Materials Handling Show — Aug. 11-13, Civic Auditorium, San Francisco. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17).

Chemical Show—Sept. 9-12, International Amphitheater, Chicago. (National Chemical Exposition, 86 E. Randolph St., Chicago 1.)

Western Tool Show—Sept. 29-Oct. 3, Shrine Exposition Hall, Los Angeles. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 S. LaSalle St., Chicago 4.)

Metals Show—Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastic Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

JULY

Truck-Trailer Manufacturers Assn.—Summer meeting, July 14-16, Homestead, Hot Springs, Va. Society headquarters, 710 Albee Bldg., Washington 5, D. C.

The Material Handling Institute, Inc.—Joint industry fall meetings—Sept. 22-24, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, Suite 759, One Gateway Center, Pittsburgh 22.

SEPTEMBER

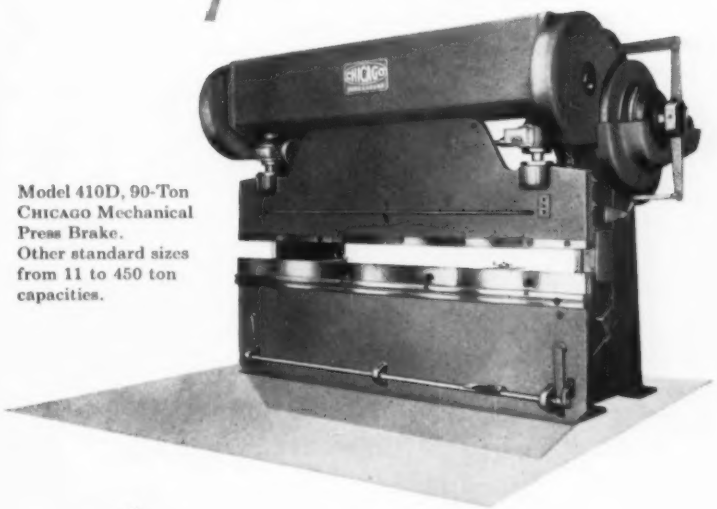
National Petroleum Assn.—Annual meeting, Sept. 10-12, Hotel Traymore, Atlantic City, N. J. Society headquarters, Munsey Bldg., Rm. 958, Washington, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 22-23, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland 13.

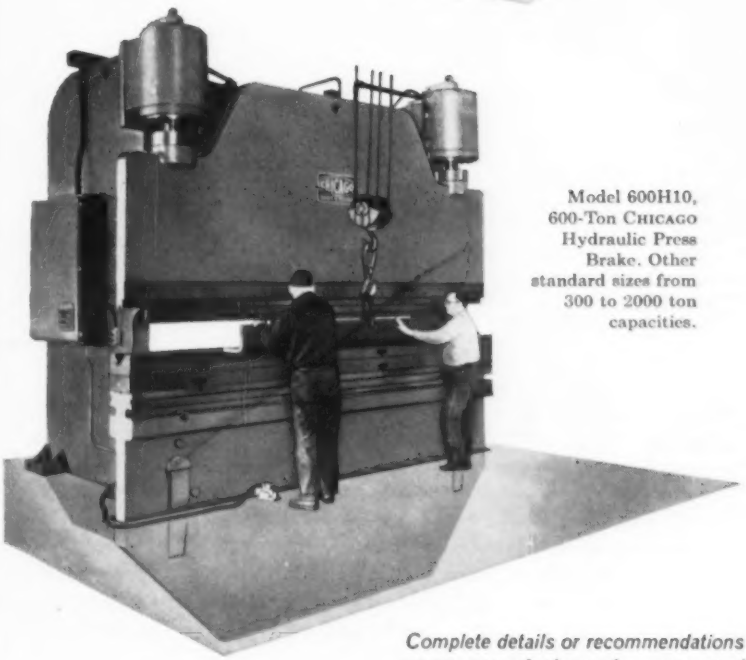
(Continued on P. 16)

CHICAGO® PRESS BRAKES

unexcelled accuracy / ***for sheet metal and plate work***



Model 410D, 90-Ton CHICAGO Mechanical Press Brake. Other standard sizes from 11 to 450 ton capacities.



Model 600H10, 600-Ton CHICAGO Hydraulic Press Brake. Other standard sizes from 300 to 2000 ton capacities.

Complete details or recommendations on any press brake work upon request

8439

Press Brakes
Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Forming Machines

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DREIS & KRUMP MANUFACTURING CO.
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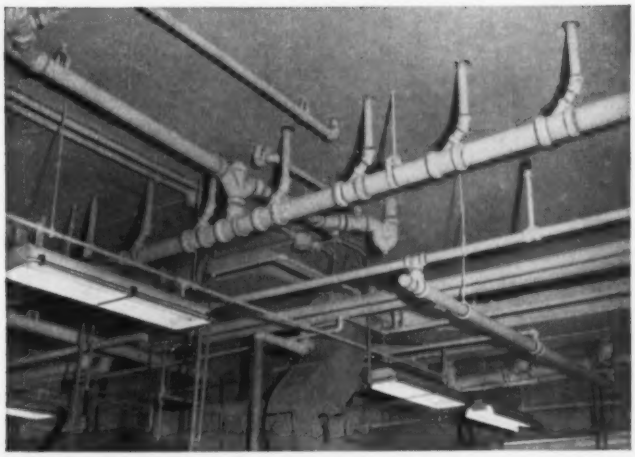
NEW IDEA PROTECTS INCREASED CAPACITY PERFORMANCE WITH REPUBLIC FASTENER PRODUCTS

MODERN, *NEW IDEA* TWO-ROW CORN PICKERS use a wide variety of Republic Fastener Products. Typical types are shown in inset. Republic Fasteners assemble easily and assure dependable, long-term holding power . . . the basis for maximum safety and trouble-free performance.

NEW IDEA Division, Avco Mfg. Corp., Coldwater, Ohio, takes pride in producing agricultural equipment designed to meet the increased efficiency and yield requirements of modern farming. The machine shown above is a good example of how these objectives have resulted in a better-than-ever, two-row corn picker. And the inset shows several types of Republic Fastener Products used to protect designed-in performance objectives.

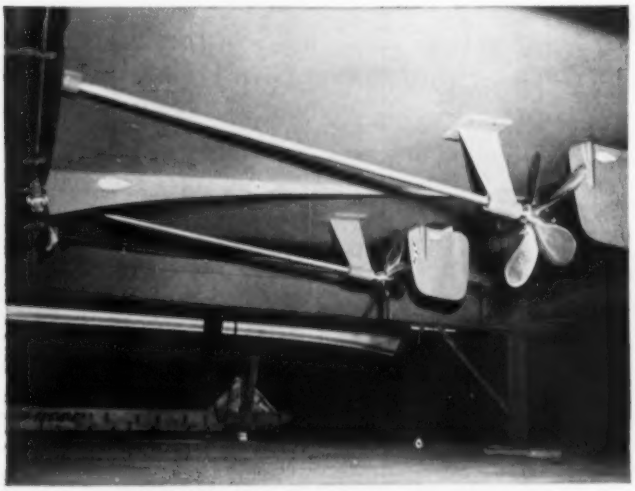
Because 1200 fasteners are used in each unit, *NEW IDEA* engineers refuse to compromise the time, effort, and money required to produce a safe, reliable product by specifying anything less than the best. Over the years, Republic has established a record of complete dependability plus unexcelled economy. This same level of quality is standard throughout Republic's broad line of fastener products, including 20,000 standard and 8,000 special types and sizes.

Whatever your assembly or product fastening application, it will pay you to protect performance specifications by insisting on Republic Fastener Products. For complete information, contact the Republic office nearest you, or mail coupon.



GOOD PERFORMANCE PLUS ECONOMY provided by Republic Steel Pipe make it ideal for a wide range of industrial piping applications. Illustration shows steel pipe used for steam, air, waste, and sprinkler system lines. Beyond low cost and long life, Republic Steel Pipe permits fast, economical installation. Because each length of Republic Pipe is uniform in strength, ductility, and wall thickness, operations including cutting, threading, bending, and welding are simplified. For complete information on types, sizes, and specifications, contact your nearest Republic Pipe Distributor. Or send coupon.

PROTECTION DURING STORAGE for bulky, uneven, odd-lot, and fragile materials is readily secured using Republic Steel Pallets and adjustable Pallet Racks. Tubular steel supports on racks adjust every six inches to handle palletized material of varying height. Two-way entry permits loading and unloading from either side. Single pallets can be selected from any level without restacking. As a result, handling, stacking, and palletizing are simplified. For data, send coupon.



CORROSION PROTECTION AND VIBRATION REDUCTION are two of the many benefits gained by Roamer Steel Boats, Division of Chris Craft Corporation, Holland, Michigan, through use of Republic Cold Finished Stainless Steel Bars for drive shaft manufacture. Bars meet Roamer's strict, maximum tolerance of .006" run-out in 72" of shafting required to overcome damaging vibration. Moreover, high cross sectional accuracy minimizes necessary machining. Corrosion-resistance of Republic ENDURO® Stainless Steel permits long-term operation in waters where other materials may be severely attacked. High strength-to-weight ratio of ENDURO provides still further advantages. Mail coupon for details.

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Your inventory is prime collateral . . . and Lawrence specializes in providing inventory financing right on your own premises — quickly and economically! For full details call our nearest office collect or send the coupon.

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79 Wall Street, New York 5, New York

OFFICES IN ALL PRINCIPAL CITIES

EXHIBITS, MEETINGS

(Continued from P. 13)

Air Moving & Conditioning Assn., Inc.—Annual meeting, Sept. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 2159 Guardian Bldg., Detroit 26.

Porcelain Enamel Institute — Annual meeting, Sept. 25-27. The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1145 19th St., N. W., Washington, D. C.

The Electrochemical Society, Inc.—Semi-annual meeting, Sept. 28-30 and Oct. 1-2, Chateau Laurier, Ottawa, Canada. Society headquarters, 1860 Broadway, N. Y.

Pressed Metal Institute — Annual meeting, Sept. 28 - Oct. 2, The Cloisters, Sea Island, Ga. Society headquarters, 3673 Lee Rd., Cleveland 20.

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington, D. C.

Gray Iron Founders' Society, Inc.—National annual meeting, Oct. 8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

American Machine Tool Distributors' Assn.—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society headquarters, 38 S. Dearborn St., Chicago.

Turn your pressing problem into a *profit operation* with an

C-FRAME STRAIGHTENING PRESS

Accessible, fast, flexible for performing a variety of general-purpose straightening, forcing, bending and forming work. Sizes and capacities for all service needs.

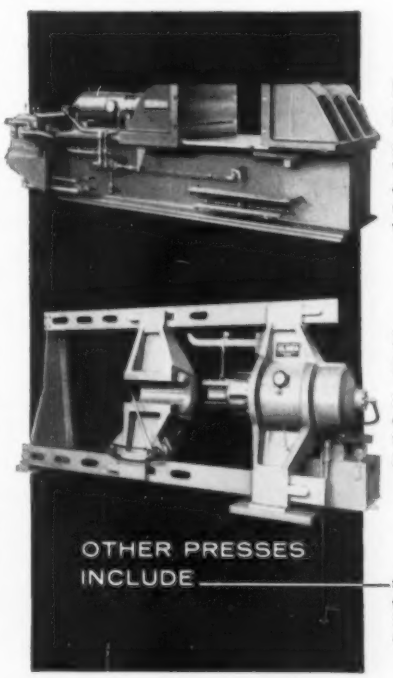
ELMES

"Job-Fitted" HYDRAULIC PRESS

Hundreds of manufacturers have called on Elmes to help solve production problems involving pressure application. It's no secret that Elmes engineering is pre-eminently qualified to provide this profit-making service—to recommend *the right press for the job.*

It will pay *you*, too, to call in Elmes on your pressing problems. Maybe your answer is in one of the many standard Elmes® designs, either "as is" or with simple modification. Or, if your requirements are special, Elmes will develop a "custom-built" press to fit your needs *exactly*. This special-design function has long been an important part of Elmes' service to industry.

In any case, you'll be wise to take advantage of engineering knowledge, skill, and foresight backed by more than 60 years of leadership in specialized hydraulic service. Recommendations and cost estimates promptly supplied. See your Elmes Distributor, or write us direct.



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For heavy bending and forming. Wide range of capacities with optional choice of bed size, stroke and speed to suit individual needs.

INCLINED FORCING PRESS

For forcing heavy wheels, gears, and pulleys on and off shafts, for maintenance work, etc. Capacities from 100 to 1000 tons.

OTHER PRESSES INCLUDE — standard and special designs for drawing and forming, coining, forging, hobbing, powder metal compacting, etc.

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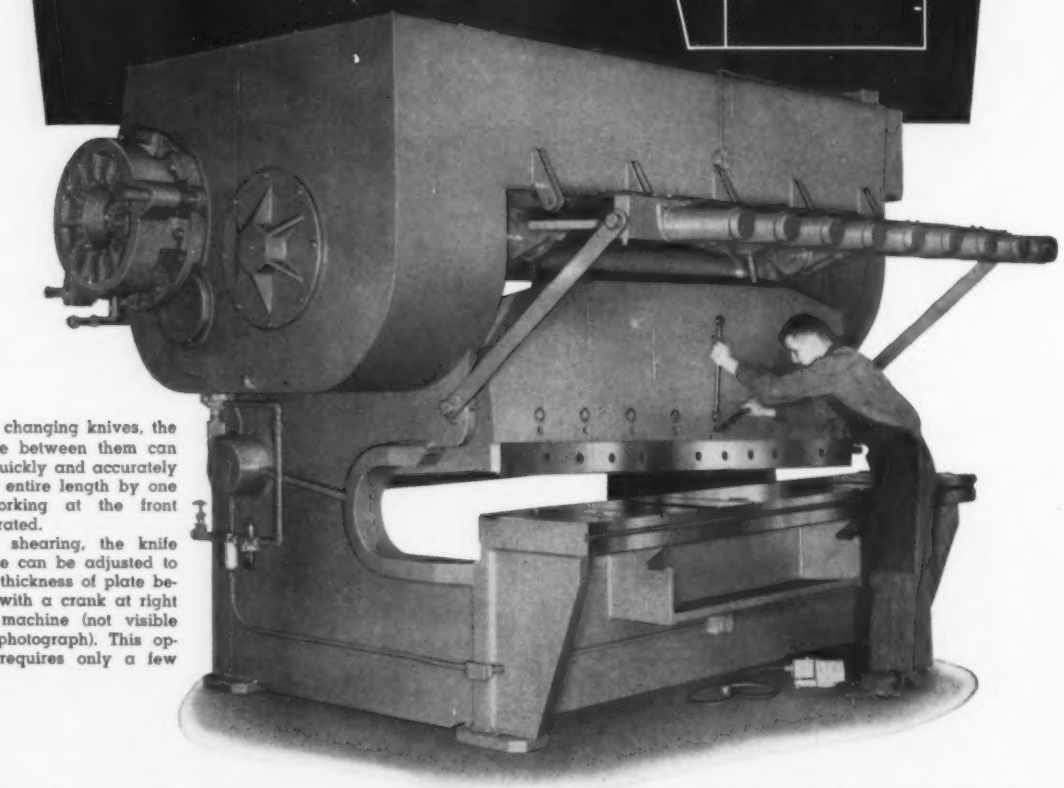
ENGINEERING DIVISION

1166 Tennessee Avenue, Cincinnati 29, Ohio

METAL-WORKING PRESSES • PLASTICS MOLDING PRESSES • PUMPS • ACCUMULATORS

Knife Adjustment...

Easy and Convenient on STEELWELD SHEARS



When changing knives, the clearance between them can be set quickly and accurately for their entire length by one man working at the front as illustrated.

When shearing, the knife clearance can be adjusted to suit the thickness of plate being cut with a crank at right end of machine (not visible in this photograph). This operation requires only a few seconds.

When the knives on a Steelweld Shear are being set parallel from one end to the other, it is not necessary to have one man at the rear of the machine turning adjustment bolts, with another man at the front gauging the knife clearance. Nor is it necessary to work between or behind the hold-downs in hard-to-reach places.

On Steelwelds the hold-down beam can be lifted out of the way and all knife adjustment bolts reached from the front of the machine. As each bolt is turned, the clearance can be checked at once. One man can make the entire adjustment in a small fraction of the time usually required.

After the knives have been set for parallel, the clearance between them can be adjusted to suit various plate thicknesses to obtain the best possible cuts. This can be done in a few seconds by turning a crank and watching a dial indicator.

Because knife adjustments have been made so convenient on Steelwelds, shear operators will make them gladly and without hesitation. This contributes greatly to accuracy and quality of cuts and assures long knife life.

GET THIS BOOK!

CATALOG No. 2011 gives construction and engineering details. Profusely illustrated.

THE CLEVELAND CRANE & ENGINEERING CO.
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STEELWELD PIVOTED BLADE SHEARS

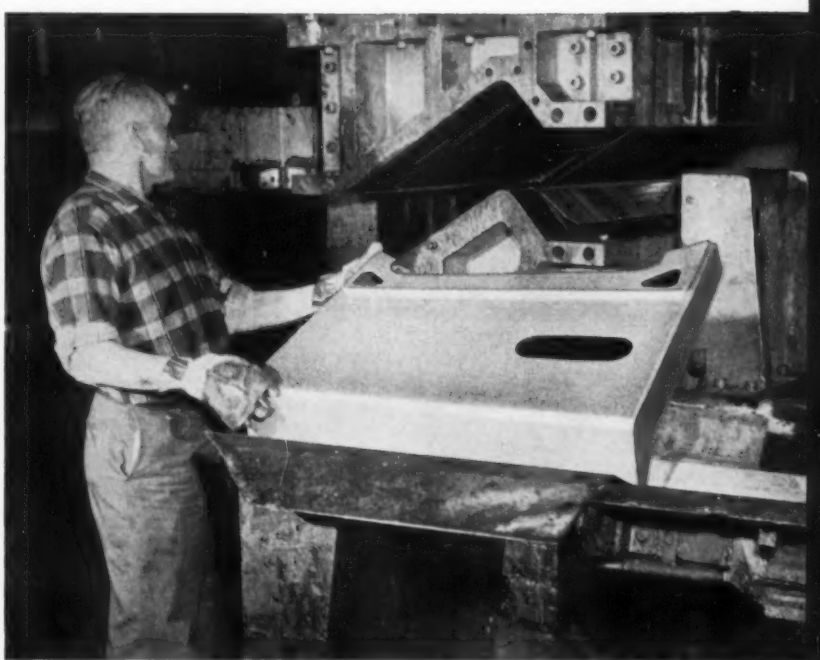
Accent on excellence

Youngstown enameling sheets

This press operator at Youngstown Metal Products Company—veteran producer of drawn stampings and fabricated parts for leading metal products manufacturers—is busy at work drawing tops for a well-known household washer-dryer combination.

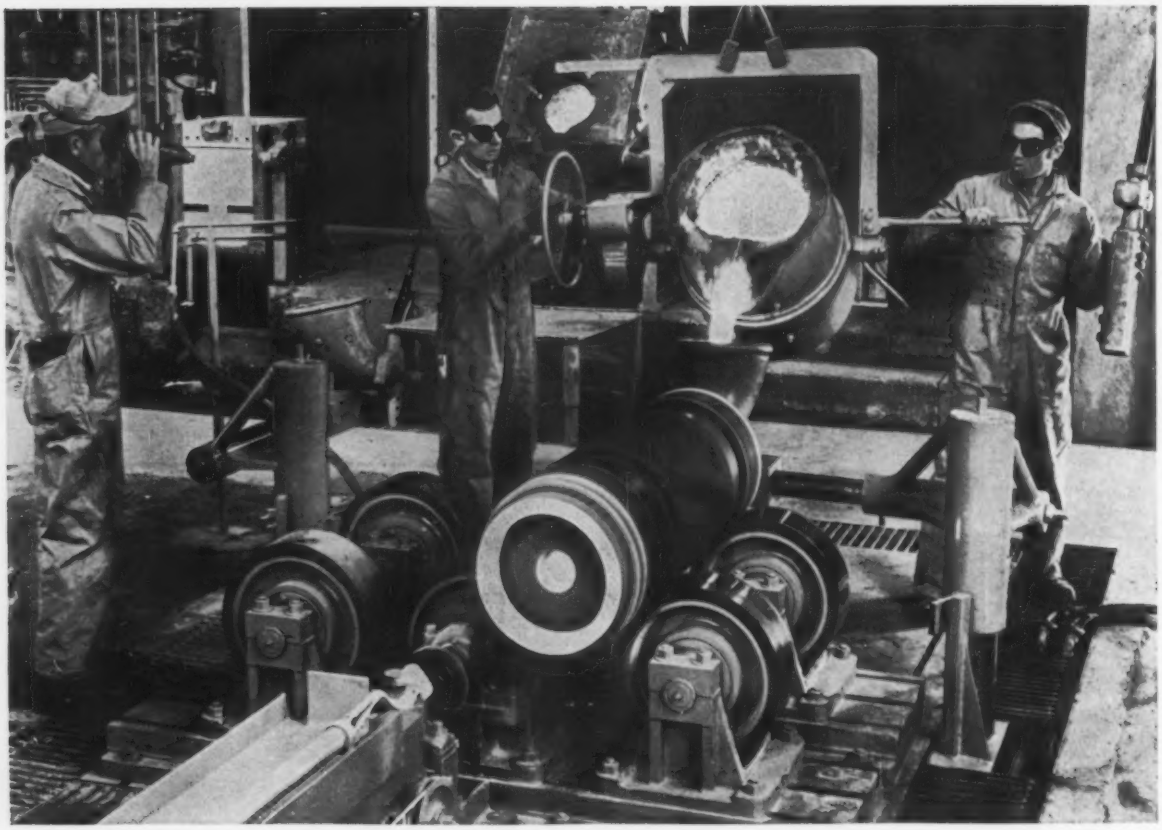
He likes to work with Youngstown Enameling Sheets because they draw easily and due to their high metallurgical quality—provide continuous high-production runs of even the most difficult-to-form parts.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".



THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio



WHY GOOD CENTRIFUGAL CASTING DEMANDS INDUCTION MELTING

Though centrifugal casting has values apart from any melting furnace used, it achieves its ultimate performance only with induction melted metals. You may have wondered yourself why the vast majority of critical centrifugal castings are poured from Ajax-Northrup induction furnaces. The reasons are many—

Take purity for example. One major advantage of centrifugal casting is that the spinning concentrates impurities such as dirt, slag particles, even gas, at the internal skin, where they can be machined away easily. Obviously, the purer the melt, the thinner the skin to be machined. And Ajax-Northrup induction melting has proved itself many times over to be the purest melting method known!

Or take uniformity. The electromagnetic stirring action inherent in the Ajax-Northrup induction furnace assures absolute uniformity of chemical composition and temperature throughout the melt, resulting in consistently homogeneous castings, even with alloys containing metals of widely varying densities such as Al, Ni, and Mo. In fact, users have been able to eliminate uniformity tests on Ajax melted centrifugal castings entirely.

The precise metal temperature control available with Ajax-Northrup induction equipment is another important consideration in the production of consistently uniform castings. Hot and cold pours are eliminated. And this combination of ideal temperature control and perfect mixing adds up to good, reproducible results.

Ajax-Northrup induction melting equipment, with its unique control system offers you maximum melting efficiency with resulting lower melting costs. The new compact designs incorporate many features which minimize floor space requirements, drastically reduce installation costs, minimize maintenance, and provide simple, more efficient operation.

Induction heating & melting

AJAX

NORTHRUP

Whether you're centrifugal casting tiny investment castings, massive rolls, or critical jet engine tail sections, you're sure to find an Ajax furnace that satisfies your needs perfectly. We'll gladly send you further information, or, if you wish, arrange a meeting with qualified furnace engineers to discuss your special requirements. Ajax Electrothermic Corporation, Ajax Park, Trenton 5, New Jersey.

ASSOCIATED COMPANIES: AJAX ELECTRIC COMPANY-AJAX ENGINEERING CORPORATION

Iron in Stable Suspension

A non-settling suspension of iron powder has promise for use in magnetic clutches. It's done by mixing the powders with metal soap, such as aluminum stearate, and a hydrocarbon oil. The heated mixture forms a jelly-like mass which on cooling breaks down to a thick viscous liquid. When subjected to a magnetic field the suspension becomes rigid, but becomes mobile when the field is removed.

Unit Suppresses Explosions

An effective safety device for enclosed plants handling explosive materials suppresses explosions with a rapid dispersion of an extinguishing fluid. A diaphragm detector immediately senses an explosive wave to trigger a detonator which in turn bursts the vessel containing the fluid.

More Scrap From Military

At the urging of Congress, the military is going to increase its sales of scrap. Lawmakers make it clear this year that the $41 million scrap disposal fund isn't a limitation, but extra money to be used on top of general appropriations. It's claimed the expense of turning surplus goods into scrap for disposal is offset by savings in warehousing.

Promotion Pays Dividends

Industry-wide promotion campaigns can pay big dividends for sponsors. One metal association has just totalled up results from its last 12 month's activities and has voted substantially larger funds for the coming year. Telling its industry's story has had real benefits for member-company sales departments.

Soviet Tool Threat Dies

Russia won't be exporting big quantities of low-priced machinery and machine tools to the Free World until 1960, at least, European observers say. Red rulers need all the machinery Russia and its satellites can produce to build up their own consumer goods industries. Propaganda shipments of steel-mill equipment from Russia to India and Egypt will likely continue. But West Germans feel much of it will actually be transhipped from Germany or Czechoslovakia.

Check Surface Roughness

A simple method for estimating surface roughness uses a long, thin, uniform thread of vaseline, colored with mechanics blue grease. A small hypodermic syringe with a needle of less than 1-mm bore is dipped in benzene to prevent thread from curling when dispensed. The extruded thread is laid in a straight line. A small piece of glass pressed on the thread forces it outward into a band, the width of which is a measure of roughness of metal surfaces.

Film Protects Ball Bearings

Tests with a newly developed coating film show good promise for allowing jet-engine ball bearings to operate for several hours after a lubrication system failure. For missiles, this could mean the elimination of lubrication pumps, sumps, and pipes. Just one shot of lubrication would last the required operational time.

Pellets to Charge Furnace

First full-charge tests of R-N pellets, a 95-pct iron bearing material in which the ore has been reduced to metal without going through a blast furnace, will begin in the near future. Pellets will be charged directly into an electric furnace. It's regarded as a most important step in cutting electric furnace costs.

Numbers to Speed Diework

One of the largest producers of forgings is trying out numerically controlled mills on diework. Results are said to be promising. On dies already kellered there's a definite gain in lead time and savings in labor costs. Automotive firms are reported to be studying procedures to see how they can take advantage of the method to cut model changeover time.

Radical new concept in handling bearings speeds shipping

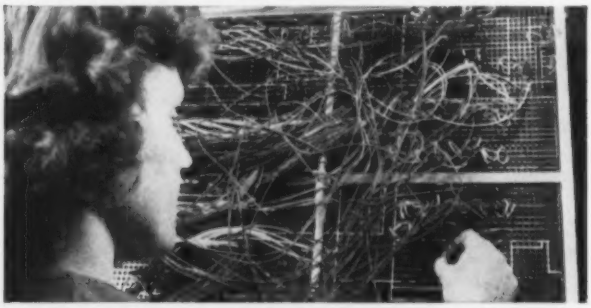
Helps you 6 ways when you buy Timken® bearings

To give you faster, better service when you buy Timken® tapered roller bearings, the Timken Company has developed a revolutionary new concept in warehousing, order processing and shipping. All the elements of the system converge at our huge new $3,000,000 Shipping Center in Bucyrus, Ohio, that enables us to get your bearings out faster and more dependably than ever before. It helps you in six important ways.

1. Reduces time required to process your bearing order. The new system, which uses the electronic computer, enables us to give you an acknowledgment and shipping date on most orders within 24 hours. **2. Cuts shipment and invoice preparation time.** Makes things easier for your purchasing department.

3. Your order comes completely from one shipping point. Single source handling further speeds your bearing shipment. **4. Your orders having the same shipping date are consolidated.** Increases handling efficiency at your plant when you receive your Timken bearings.

5. The new system helps assure delivery when promised, because it controls our production to meet your needs. **6. It gives you a practically** unlimited source of supply for tapered roller bearings, from our normal warehouse inventory of over 12 million bearing cones and cups.



And the IBM Computer (grid of which is shown above) is the system's heart. It integrates the Shipping Center with all our production facilities—controls the system which speeds order processing and keeps our production in line with your needs. This totally new concept in customer service is one more reason why you get your No. 1 bearing value when you buy Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

BETTER-ness rolls on

TIMKEN®

tapered roller bearings

On Lawn and Lake, a $500 Million Market for Metalworking

Outboard motor and power lawn mower makers have made spectacular gains in postwar years.

Growing leisure markets have wide possibilities for metalworking as makers add attachments, beef up power.—By H. R. Neal.

ONE OF MILLIONS: New riding mower, coming off Moto-Mower assembly line, shows trend to bigger mowers with more attachments. More than 3 million power mowers were produced in the U. S. last year.

▪ This weekend, millions of early risers will shatter the silence of countless communities with a sputtering cacophony of power lawn mowers as they zip effortlessly through a formerly arduous task—cutting the lawn.

A short time later, many of these same people will be criss-crossing thousands of lakes and rivers in pursuit of the nation's fastest growing family-participation recreation—outboard motor boating.

History of Growth—From 1950 through 1956, last year for which complete figures are available, total production of engines under 50 hp has climbed from 2.7 million to 5.72 million. In this same period, power lawn mower output has about tripled from 1.08 million in 1950 to 3.2 million in 1956. Last year a record 3.3 million were produced.

Outboard motor production, after hitting a post WW II low of 284,000 units in 1951, rebounded to an all-time high of 642,000 units in 1956. Last year, however, sales slipped to 573,000 units. So far this year, unit sales for the industry trail last year by 6 to 8 pct but, due to growing demand for larger motors and more accessories, dollar volume is ahead of a year ago.

Resist Recession—In the eight years through the end of 1957, some 15,850,000 gasoline engine powered lawn mowers were produced in the U. S. This year production trails a year ago by only about 5 to 7 pct and is expected to reach about 3.1 million units for the year.

Harold K. Howe, director of the Lawn Mower Inst., says output is expected to remain at a level slight-

ly above three million units a year until the next boomlet due in the 1960's.

Size of the potential market seems only to be limited by the number of houses with a patch of grass that needs at least occasional cutting.

One for Four Cars—There is, he says, currently one power lawn mower for every four passenger cars or families. Even with this high level of usage and present high levels of production, the Institute believes market saturation is still well under 50 pct.

Most popular power mowers are the rotary type—essentially just a spinning propeller suspended above the turf. This popularity is often a matter of price. Some rotary type mowers are available for only about twice the cost of a hand-pushed reel mower. They account for about 90 pct of current sales, with reel-type mowers taking the remaining 10 pct. prior to 1946, the reverse was true.

Many Trade Names — Before World War II there were 38 to 40 lawn mower manufacturers of which some 18 produced power types. Today there are about 260, according to Mr. Howe. But, he points out, only 60 to 65 of the 260 manufacturers produce nearly 97 pct of the mowers sold.

Edward V. Oehler, sales vice president for Briggs and Stratton, the country's largest producer of small horsepower gasoline engines, says many of the occasional mower manufacturers just assemble the components.

Parts List—Production of a low-cost rotary type lawn mower requires a motor, a stamped deck for mounting the motor, wheels, a blade, a connecting link between motor and blade, a handle and simple control system.

Replacement Market — William Scott, general manager of Outboard Marine Corp., which also manufactures power lawn mowers at its Lawn-Boy Div., explains: "First purchasers of power lawn mowers tend to buy a low priced unit, then, after several years, to upgrade themselves."

This fits in with the life expectancy of each type of mower—which also helps create a replacement market. The simplest rotary mowers last an average of 3.5 to 5 yrs, while reel-type last from 7 to 10 yrs.

Service Problem—Adequate service is the next problem to be tackled, according to Mr. Howe. While replacement and repair parts are available from the majority of manufacturers, most of their dealers don't maintain repair shops.

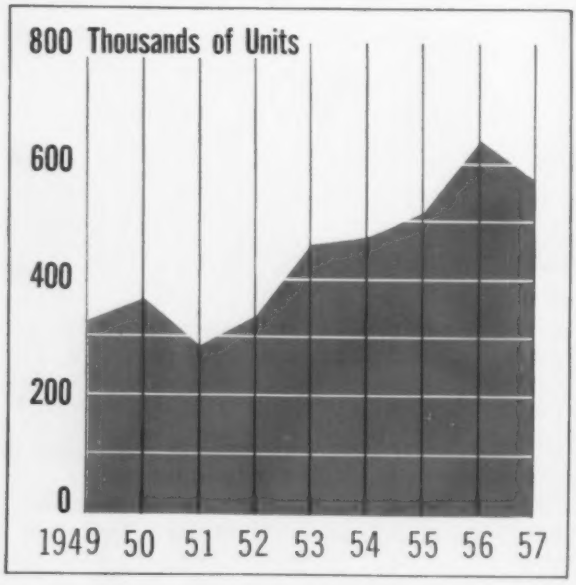
As one phase of this program, the Institute is encouraging trade schools to teach servicing of small engines. At the same time, it offers advice on how to lay out and conduct a service shop.

Many of the reasons which have contributed to the rising popularity of power lawn mowers as a means of creating more leisure time apply to the growing appeal of outboard motor boating as a means of enjoying leisure time.

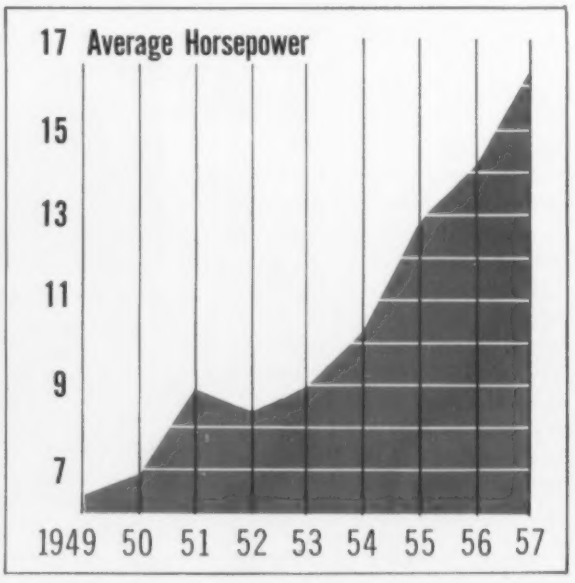
Outboard Appeal—For one thing, the American worker has become a new leisure class. He is working shorter hours, taking longer vacations, and generally spending more money and time on leisure time goods than ever before.

Charting the Outboard Motor Boom

While Sales of Motors Climbed



Motors Got Bigger and Bigger . . .



Boating has become more of a family sport. Once bought primarily by fishermen, cruising and water skiing have gained steadily in popularity over the past several years.

Mechanical and design improvements in boats, motors and boat trailers have made boating equipment easy to operate and maintain, as well as eye appealing.

Outboard owners are replacing their equipment with new, and in most cases larger and more powerful outboard motors and boats.

State, municipal and Federal programs have created new waterways and opened new areas to boating.

Outboard motors have nearly as long a history as the automobile. Earliest efforts date back to the 1890's. First mass production motor was brought out in 1905 by Cameron B. Waterman—a 2-hp, single-cylinder, water-cooled engine.

Sales Multiply—By 1917, at least a half-dozen firms were manufacturing the portable boat motors and Americans were buying them at the rate of 15,000 to 20,000 a year. However, in the 23 years preceding World War II (1919-1941) outboard sales totaled only about 1,-132,400 motors. In the 12 years since World War II, excluding 1958, about 5,470,000 outboard motors were sold.

After years of little change, outboard motor manufacturers took a cue from the automobile industry and have made drastic engineering changes within the past 10 years. In addition, they have added styling and color to their products.

Bigger Units—In 1947 the average horsepower of motors sold was 4.7. Last year it was 16.3 hp.

Today, Evinrude and Johnson offer engines rated at 50 hp. Kiekhaefer rates one of its Mercury engines at a whopping 70 hp and another at 60 hp. Scott-Atwater, a division of the McCulloch Corp., also has a 60 hp outboard motor.

A number of other engines are offered with 35, 40 and 45 hp, and the "standard" big engine has become the 35 hp model with most manufacturers.

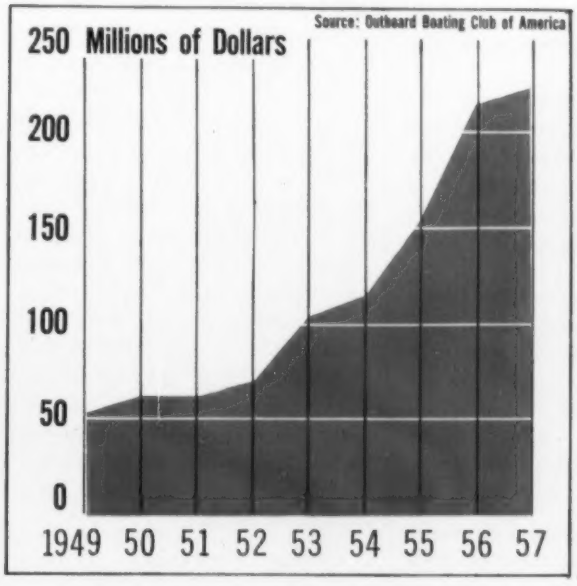
Design Advances — Significant design differences have evolved in recent years among the major outboard manufacturers. Single cylinder engines are found only in the under-5 hp group.

Outboard Marine's Johnson and Evinrude engines of 50 hp are of a V4 design. McCulloch's Scott-Atwater 60 hp models have three cylinders. Kiekhaefer's 60 and 70 hp Mercury motors have in-line, six-cylinder engines; its 40 and 45 hp models have in-line four-cylinder engines. Two-cylinder engines are used for most other sizes of motors offered by all manufacturers.

Outboard Marine's Mr. Scott also gives some reasons why larger motors are becoming more popular. For one thing, introduction of die-casting techniques for aluminum engine blocks has enabled manufacturers to hold down both the weight of the engine and the cost of manufacturing them.

Aluminum Use—Some 45 million lbs of aluminum were used in the fabrication of boats and outboard motors in 1957, according to aluminum producers. This included 15 million lbs for boats and 30 million lbs for outboard motors—about 10 to 12 pct more than in 1956.

And Dollar Volume Multiplied



How Germany Views Red Trade

It Favors Broad Easing of Embargo List

West German industrialists see Red threat in a different light than we do.

They would like to ship machine tools to Reds, disagree on danger.—By G. F. Sullivan.

▪ Industrialists of West Germany do not see eye to eye with U. S. foreign policy on trade between the Communists and the Free World.

West German industrialists, and we talked to a number of them, are as anti-Communist as most Americans, but they see the Communist threat in a different light.

Opinions Change — Their opinions are important, because they have begun to change some American viewpoints and they hope to reverse our attitude entirely.

The embargo list, the list of types of machines which NATO powers have agreed not to ship into Russia, is being worked out in Paris at the NATO level. But already under way are shipments of steel.

Steelmakers and machine tool builders in Western Germany, do not agree entirely on the issue. Steelmakers are less concerned—some 88 pct of their total production is consumed at home. But nearly half of Germany's machine tools are exported.

Steel Agreement—As part of the recent trade agreement between Germany and the USSR, Russia will ship 75,000 metric tons of pig iron to Germany next year and in 1960; for 1958 and through 1960 it will also ship 2500 tons of ferrochrome, 3500 of ferrosilicon.

In return, Germany will ship 150,000 metric tons of rolled steel products this year, adding 50,000 tons to the figure in 1959 and 1960 and 35,000 tons of pipe.

Reasons behind the agreement, including the prisoner of war return and other pressures, are well known. But steelmen are unconcerned, can't see it affecting Soviet war potential.

Tool Builders Annoyed — But machine tool builders of Germany are thoroughly annoyed with the U. S. for two reasons: (1) Proposals that the U. S. import duties be raised and (2) The U. S. embargo list of tools not shipped to Russia.

They assert that the size of U. S. imports of German tools in 1957 was perhaps 3.6 to 3.8 pct of U. S. production. They take issue with higher figures circulated in the U. S. Incidentally, German machine tool builders are doing well, have an average backlog of eight months.

Oppose Embargo — But they seem to be even more vocal on the embargo, which is now under discussion in Paris. The U. S. has been opposed in many areas by virtually all European nations.

Here are some observations of German machine tool men:

The Russians have a fairly sizable machine tool industry now. Russian claims to having produced 125,000 machine tools last year can't be detailed by weight, size or dollar volume, but they have some good machines and good designs.

Why are U. S. ideas on the embargo opposed? The U. S. apparently fears that any contribution to building up the Soviet machine tool industry one day could come back to haunt us.

German Viewpoint — German

USSR Dumping: Can We Ignore It?

▪ Aluminum, tin, pig iron and other products have been dumped by Russia on the world markets during the past year.

"Dumping" is defined here to mean sales on an irregular basis at below market prices.

It can have three results:

1. Dumping can directly affect the American economy, as price cuts in aluminum have so graphically shown.

2. It alters regular trade relations between Free World nations and their normal customers.

3. It can change political ties, make friends of under-developed nations.

The threat of Russian dumping is now held over many segments of Free World trade and commerce, both as a political and economic weapon. To ignore it is dangerous, but methods of combating it are difficult.

For example, how would the German steel industry handle the threat of Soviet dumping? For one thing, rules of the European Common Market will be arranged to prevent dumping in the free trade area.

But to counter any possible Soviet dumping in any other areas, they can only reason with customers and try to explain that theirs is an assured regular supply source. Government subsidies, comparable to U. S. economic assistance programs, are too costly for most other nations.

machine tool men do not see Russia as a competitor in world machine tool markets in the foreseeable future. They believe that too much needs to be done within Russia.

They agree that exports of special purpose tools that can be used only for armament production should remain embargoed. But, they ask, why embargo jig borers when both Russia and Czechoslovakia build them in all sizes?

On View at Brussels—You can see a large USSR jig borer at the Brussels Fair, and it is said to have a high order of accuracy. The USSR is also showing a line of gear cutters.

Why embargo these, the Germans ask, when we know they can make them? They also want the ban lifted on copying and tracer-controlled millers and grinders, except those which are suitable only for aircraft or aircraft turbine work, such as skin millers.

And they'd also like to move the top limit on hydraulic and mechanical presses from 1000 to 5000 tons.

The U. S. delegation has agreed in preliminary conferences to lifting some embargoes. These would include vertical turret lathes, except some special types obviously suited for turbine disks; and, on the same basis, T-lathes. Thread millers apparently will come off the list.

Should We Trade With Russia?

What do industrialists in Germany and Great Britain think of East-West trade? How do their views differ from ours?

To answer these and other vital questions in this area, The IRON AGE presents here the first of two articles highlighting opinion in the two most industrialized nations of Western Europe.

Their views, which may affect future U. S. action, are reported from Europe by the editor of The IRON AGE.

CHARGE: Molten metal from 450 kw electric induction furnace at new American Brass California mill will be cast into extrusion billet.

New Brass Mill

▪ The West Coast's newest and most modern brass mill is now in operation at Paramount, near Los-Angeles, Calif.

"The rapid industrial growth of the West Coast and the enthusiastic support we have received for users of our products made apparent the need for a basic mill to serve this area," explains C. Russell Epley, vice president in charge of this new division of American Brass Co.

Cost and Capacity—The 400,000 sq ft facility cost American Brass, a subsidiary of Anaconda Co., about $18 million. The rated capacity is about 30 million lb of copper, brass and bronze tube, sheet, strip, rod, drawn products and special shapes annually.

When the mill is in full operation it will employ about 500 workers.

Some of the streamlined equipment the new mill boasts includes three electric induction furnaces, each of which will take a 6000-lb charge and turn out metal enough for two, eight-in. diam, 100-in. long extrusion billets.

Piercing Mill—An Aetna Standard Roll Piercing Mill, operating on the Mannesmann principle, will pierce up to 75 billets per hr. for extruding tubes. The billets are preheated in a gas-fired furnace which will warm up four sizes of billets, 14,500 lb per hr.

Workhorses of the rolling operation are two, 4-high Bliss Rolling Mills. The larger has a maximum width of 24 in., and will roll ¼-in. strip down to .008-in. gage. It is equipped with modern control devices such as an automatic x-ray gage control for holding very close tolerances.

Design, engineering and contract supervision was handled by Anaconda Co.'s engineering dept. Rosendahl Corp., Los Angeles, was the contractor, with erection of steel by Bethlehem Steel Co.

PRACTICALLY NEW: Reopened Cleveland Works of J & L will include some of the latest and fastest equipment in the steel industry. Result will be increased capacity, bigger and wider sheet coils.

J & L Rounds Out Modernization

Re-opened Cleveland Works will be one of the most modern works in the industry.

Punch card blooming mill and high-speed cold-reduction mill are key features. Aliquippa completes new pipe mill.

▪ Development of Jones & Laughlin Steel Corp. into one of the most thoroughly up-to-date in the industry is underlined in two current events.

In the Midwest, the re-opening of the Cleveland Works emphasizes the high degree of automatic handling that has been built into the integrated operation there.

Expansion at Aliquippa—At the Aliquippa Works, putting into operation of a second continuous weld pipe mill marks a 10-year, $200 million expansion program which has increased production and broadened the range of J&L products.

The Cleveland plant was shut down in February for installation of new mills and equipment. Reopening was delayed by lack of new orders while steel was shipped into the area on an equalization basis, from Aliquippa and Pittsburgh mills to permit them to operate at higher, more efficient rates.

Shipping This Month — Finish rolling of hot bands shipped in was started in June at Cleveland to meet a rash of orders for delivery within the month. Operation of one of two blast furnaces and four to six openhearths will be resumed after the July 4 holiday. First locally-made hot-rolled sheet will be shipped late this month and cold-rolled in mid-August.

Some top features of the Cleveland Works are a $17 million automatic blooming mill and a $20 million, 4-stand, cold-reduction mill made by Bliss, fastest and most powerful in the industry at 3800 fpm.

Capacity Up—Ingot capacity has been boosted to 1.8 million tons from 1.4 million. Coils up to 30,000 to 40,000 lb can be turned out and cold-rolled sheet capacity is almost doubled.

The blooming mill carries punch card operation another step. The operator merely inserts the right card for the size he wants, pushes a button to start the sequence. The mill finishes processing by itself.

Strain gages on the mill housing are being tested as an additional detecting device. As worked out by J & L, General Electric, and Mesta engineers, these would indicate when the steel has cleared the mill and would start the next operation. Their reliability on light passes is being checked and they may eventually be interlocked with the heat indicating system.

Sinter Plant—A new $7 million sinter plant at Cleveland Works is conservatively rated at 2500 tons per day. Designed by Arthur G. McKee Co., it is in line with the industry trend toward beneficiated ores and will add to blast furnace capacity.

At Aliquippa, the two continuous weld pipe mills were constructed at a cost of $17 million.

The entire Aliquippa expansion gives J & L greatly enlarged and modernized facilities for production of seamless and welded pipe, tinplate, wire products, strip mill products, and a broader range of structurals.

Industry Tax Suffers a Setback

Management Has a Breaking Point, Baltimore Learns

'Ability to pay' is a common principle used in levying new taxes.

But lawmakers sometimes overlook industry's willingness to stay.—By R. O. Schulin.

▪ After a stormy year-and-a-half, Baltimore's city fathers changed their minds about taxing industry. So have a number of communities in Pennsylvania's Allegheny County, where a tax on machinery was in effect for 50 years.

In their constant search for new sources of income, local governments are learning that a levy on industry can sometimes lose more money for a community than it takes in.

Reason to Move—Last week in Baltimore, Mayor Thomas D'Alesandro sat down and signed an ordinance repealing a hefty 2.98 pct tax on the assessed value of industry's machinery and inventories—a tax which he had put into effect a scant 18 months earlier. The Mayor termed the new ordinance "an anti-recession measure." But it also was a move to stop the wholesale exit of industry from the city.

In the brief period the tax was in effect, 15 companies moved or made plans to move all or part of their operations out of the city, according to the Baltimore Assn. of Commerce. These moves affected 1200 workers with an annual payroll of $5 million.

Expansions Called Off—Another 12 firms announced cancellation or indefinite postponement of expansions totaling $56 million. It doomed 2200 potential jobs and an annual payroll of $9,750,000.

Counties and regions surrounding Baltimore aimed a barrage of advertising and publicity at the city's industry, showing the tax advantages of their industrial climate. It took effect.

Neighbors Gain—The combined announced investment in new industries and expansions in the city was 79 pct less in 1957 than in 1956. But in the counties surrounding Baltimore, the investment in new industries and expansions increased 110 pct.

During 1957, the Baltimore Assn. of Commerce points out, local industry paid out $11.6 million under the machinery and inventory tax.

Tapering Off Process—The new Baltimore ordinance exempts new industry and expansions from the machinery and inventory tax after July 1. Existing machinery and inventories will be subject to a 25 pct reduction in taxes annually, beginning Jan. 1, 1959. So by 1962 the tax will have disappeared.

Meanwhile, in Pennsylvania, Allegheny County is gradually reducing its long standing tax on machinery and equipment according to a 1957 act of the General Assembly. Starting this year, assessments on machinery are being reduced 20 pct a year for five years.

Offsetting Factor—A study made in 1956 on the impact of the tax showed that new plant value would more than offset assessments of old plant machinery.

Coincidentally, U. S. Steel decided to spend millions of dollars to modernize its Duquesne Works.

Baltimore's Tax Took Its Toll on Industry

When the City of Baltimore levied a 2.98 pct tax on the assessed value of machinery and inventories on Jan. 1, 1957, new industry and expansions in the city declined sharply. The tax was repealed as of July 1, 1958, ending an 18-month run.

New Industries in Baltimore:	Number	Investment
1957*	7	$210,000
1956	26	$795,000
1955	19	$930,000
1954	26	$11,445,000
Plant Expansions in Baltimore:		
1957*	113	$10,094,750
1956	124	$47,435,000
1955	119	$50,629,500
1954	100	$38,170,000

*Year tax was in effect

Source: Baltimore Assn. of Commerce

Alloys Hint Titanium Comeback

Crucible's Beta Alloy Has Promising Future

Not long ago, titanium was written off as a metal that never lived up to early promise.

Now, a breakthrough on new alloys means probable new markets in the missile field.

▪ New life may be pouring into the titanium picture. A technical breakthrough promises to unlock fresh markets and a change in military schedules could revive old ones.

The breakthrough was revealed last week when the titanium division of Crucible Steel Co. introduced three new alloys. Bracketed under the trade name, "Formageable," the new products offer special strength and working properties.

Most Versatile—Most significant of these is the Beta titanium alloy (B-120VCA). It is a highly alloyed titanium that retains its high temperature (Beta) structure down to room temperature. Additions of vanadium, chromium and aluminum stabilize the alloy's structure and at the same time impart high strength.

Crucible calls its new product "the most versatile titanium base alloy yet developed." The company says it has the highest strength and best formability of any titanium base material. It says the alloy is ductile-weldable; cold headable; and highly hardenable.

Future in Missiles—The Beta alloy is now being tested for a wide range of aircraft applications. Crucible feels it is ideal for honeycomb assemblies. Aircraft makers are enthusiastic about its properties.

But the material's greatest importance may be in the missile field. For manned aircraft, titanium people had been working to provide a material that would stay rigid for long periods at high temperatures. Most of the titanium went into forgings for jet engines.

The new emphasis on missiles brought a requirement for very high strength for relatively short intervals. On the basis of strength-weight ratings, there was no titanium that could match the PH stainless steels. Crucible says the Beta alloy changes this—that it provides a titanium with a higher strength-weight ratio than stainless in certain useful time and temperature zones.

Fabricating Possibilities — The new alloy also ties in with the special fabricating requirements of missiles. Described as large pressure vessels, missile bodies are made largely of formed, welded sheets. In soft condition, after solution treating, the Beta alloy has a relatively low yield strength (120,000 psi) and bends easily. Full strength is developed after forming by thermal aging. In addition, the metal has good welding properties.

If the new alloys develop as Crucible hopes, titanium may again fool many people. After the cutbacks in manned aircraft last year, it appeared that the metal was due to move backwards rapidly.

Whole New Outlook—Now the the future looks brighter. Shipments of titanium mill products are running about 500,000 lb a month. This is about half the rate of early last year but it is better than the complete standstill of late 1957.

That is well under the tonnage once predicted for this year but it is at least enough to keep the industry alive. Crucible Steel has reported that its titanium production equipment is being operated at a profit.

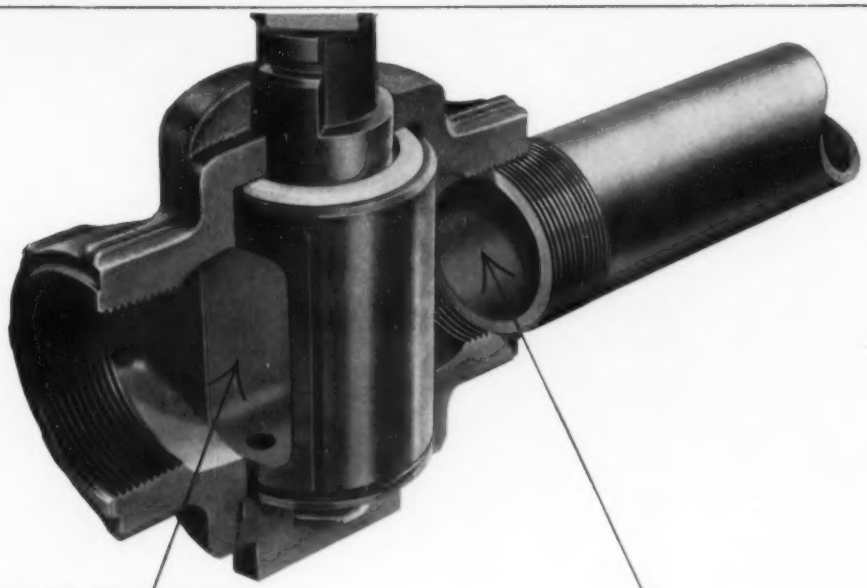
Commercial Market—The commercial market for titanium is moving ahead but slowly. There have been some big spot sales and there is general progress, but producers feel it will be a number of years before commercial applications take significant tonnage.

Why Crucible Backs Beta Alloy

What It Is—**Crucible Steel's new metal (B-120VCA) is a highly alloyed titanium that retains its high temperature (Beta) structure down to room temperature.**

What It Does—**Crucible reports the Beta titanium alloy has the highest strength (200,000 psi after aging) and best formability of any titanium base metal. The metal is cold-headable, has good hardenability properties.**

Where It Goes—**Beta titanium is being tested for aircraft applications. Crucible feels it is a natural for honeycomb assemblies; the company looks for new missile applications.**



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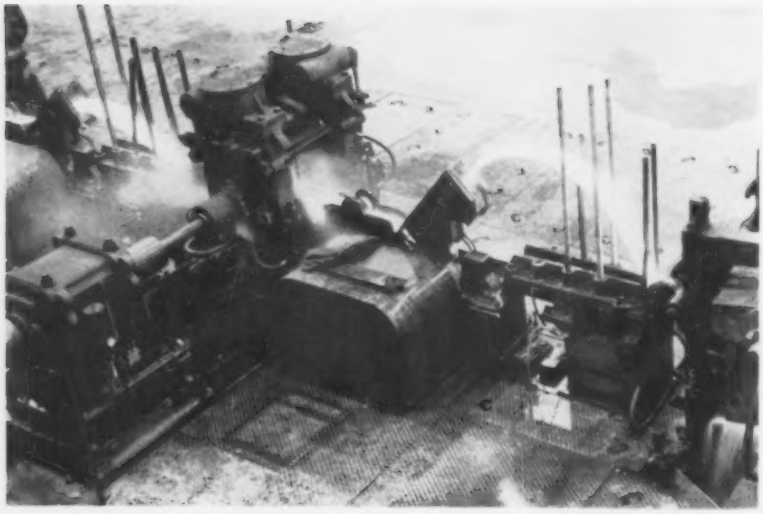

VERTICAL: The slack in Republic's "bar mill of tomorrow" rises vertically instead of the usual horizontally. Mill can reduce three and four-in. billets to ⅜ to 1¼-in. rounds, squares, hexagons, special sections, concrete reinforcing bars; and one to four-in. wide flats; in coil or lengths, at the rate of about 3000 ft per minute.

Bars For Midwest

▪ Why did Republic Steel Corp., the nation's largest producer of bars, elect to spend $18 million of a $200 million expansion appropriation for another hot-rolled bar mill?

Part of the answer is that the new unit is at Chicago, squarely in the heart of what Republic's marketing men regard as one of the biggest potential bar markets in the U. S.—Milwaukee-Chicago-Mississippi Valley region.

Market Moves—The company is backing up its new bar mill. For instance, the Chicago plant's single blast furnace has been a ceiling on available hot metal. But Republic plans to use a full taconite charge this year, boosting capacity from 1600-1700 tons per day to about 2000 tons.

Earlier this year, three electric furnaces were completely rebuilt and converted to top charges, boosting output from 75-85 tons per heat to about 150 tons per heat.

And Republic's R-N process is given a good chance to cut scrap costs for electric furnaces to about the cost of hot metal.

Taking Aim — Also, Republic says its can bring in a planned new billet mill for tube rounds as early as July if more rounds are needed that soon. And a 500-ton per month concrete reinforcing mesh machine will come in during August.

From these moves it appears Republic intends to concentrate on bar and tube markets, and is attempting to use all the competitive aces—more output at lower costs.

Mill Operation—The new bar mill is tabbed by Republic as "the most competitive in the U. S." It is an 18-stand, 3000 fpm, 85-ton per hour, 11-in. unit.

Operation is continuous and straight line, with no turning of the bars during rolling required. Coils as heavy as 1600 lb can be rolled as well as straight lengths. Average industry coil size is 600-800 lb.

Republic says it is the first vertical loop bar mill. As a ¾-in. billet is rolled down to a bar, the slack between the mill stands rises vertically rather than horizontally.

The new mill is highly automatic. Of the 100 workers in the vicinity of the mill and its 85-ton per hour heating furnace, only six actually operate mill controls.

Lift Trucks for Brazil

Yale & Towne Mfg. Co., Philadelphia, will ship 572 of its Yale industrial fork lift trucks to Brazil.

The order was placed by the Brazilian government, with the aid of an Export-Import Bank loan. It is called by Yale & Towne "the largest single export order for fork lift trucks ever placed with an American materials handling equipment manufacturer."

The trucks are part of a Brazilian port modernization program. They will be standard equipment at 18 of the country's largest ports. Santos will get the most new trucks, 132; followed by Rio de Janeiro which will get 120.

The models are the Yale KGP51, gas-powered, with a 4000 lb capacity.

Shippers Tax Ends

Federal freight excise taxes will end on Aug. 1, Congress has decided. Excises on shipment of coal and movement of oil by pipeline are also being repealed.

The Senate and House agreed to abolish the tax on freight hauling, despite pleas from the Eisenhower Administration for its retention. In removing the 3 pct freight excise, the lawmakers in effect lightened the tax load on shippers by well over $200 million a year.

Combined tax yield from all types of freight, plus the revenue from oil pipelines, is estimated at $485 million a year. Even though approximately $240 million a year in freight taxes are written off as business expenses, the Treasury Dept. nets perhaps $220 million annually from freight taxes alone.

USS "T-1" Steel can be flame-cut, welded, formed, sheared, punched, machined or forged.

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Total costs can frequently be reduced, too. In applications such as heavy machinery, rotating parts, pressure vessels and bridge members, steel costs can be lowered by reduction in cross section and substantial savings experienced in welding, maintenance, freight and erection costs.

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Why cyclotron magnet frames are made from forgings

Man is in a desperate race to learn more about magnetics. One famous acres-big cyclotron could be reduced to the size of a steamer trunk if they could only find a way to increase the magnetic field strength by 20 times. And already we see evidence that very strong magnetic fields may hold the secret to one of man's most sought-after dreams: sustained nuclear fusion power generation.

But when you double the strength of a magnetic field, the energy density or pressure increases *fourfold*. A not-uncommon 50,000 gauss magnetic field exerts a pressure of about 1,400 psi; but other laboratory experiments have already created fields of 1½ million gauss for a few microseconds, and they confidently expect to hit *10 million* gauss before long!

To contain the fantastic forces, designers of very large electromagnets turn to high-quality forged steel parts, and they very often come to United States Steel to ask for USS Quality Forgings.

The picture shows a cyclotron electromagnet frame that will go into service at Oak Ridge National Laboratory, Oak Ridge, Tennessee. It is made from six USS Quality Forgings that total 193 tons including the two cylindrical pole pieces. The pole pieces are machined to a .005″ flatness, and are parallel to within .005″. These tolerances are essential for close control over the bombarding particle beam—which often operates at velocities which approach 50,000 miles *per second*. All six forgings were melted, forged, machined, heat-treated and inspected right at our Homestead Forgings Division, and we also furnished all dowels (4½″ in diameter), nuts, bolts and lifting eyes.

Many cyclotron and nuclear reactor parts are made from USS Quality Forgings because buyers have learned that they are made from the finest steel, on the most modern equipment, by the most skilled forging men in all the world. No matter what kind or size of USS Quality Forgings you buy, you get the advantage of these same facilities. Please address inquiries or requests for our free forgings booklet to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

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To date, monolithic flat arch cover (refractory concrete made with LUMNITE calcium-aluminate cement) has provided 4 years' maintenance-free service in pit-type gas annealing furnace. Service Foundry Division, Avondale Marine Ways, Inc., New Orleans.

"...installation time cut in half...no maintenance...less heat loss,"

says Carl W. Goodgion, Chief Metallurgist, Service Foundry Division, Avondale Marine Ways, Inc.

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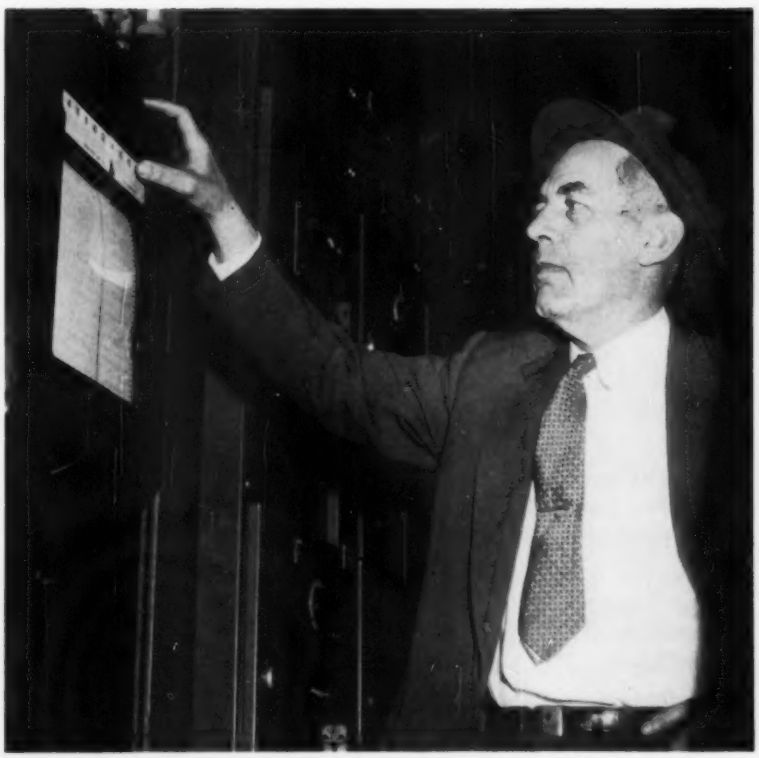
In the past 30 years, Mr. Schlegel has contributed a lot to the science of metallurgy.

He predicts that in 10 years, industry will be demanding steels never dreamed of today.



W. A. SCHLEGEL: A producer should know his customer's problems.

▪ When he took a job filling in for a vacationing temperature reader at The Carpenter Steel Co. in Reading, Pa., Walter A. Schlegel had an offer of a better job—at three times the salary — as a government chemist.

During that summer of 1927, he took a long, hard look at the future and decided that Carpenter was the place for him. Since then, he has become one of the foremost metallurgists in the country. And Carpenter recently named him resident chief metallurgist at its newly-acquired subsidiary, Carpenter Steel of New England, Inc.

Contributes to Science — Walt Schlegel is a quiet, easy-going "Pennsylvania Dutchman" who has great tenacity of purpose. His associates describe him as "a man who does nothing in excess but work."

His first move up at Carpenter was into the research division where, from 1927 through 1938, he did all the experimental melting and testing for the company. Then he was named mill metallurgist. His studies on the behavior of high speed steels during heat treatment have contributed greatly to this phase of metallurgy. He also has done a lot of work on development of bearing steels and on their production and heat treatment.

In 1941, he was awarded the Henry Marion Howe Gold Medal by the American Society for Metals for the best technical paper of the year.

Anticipating the Market — Mr. Schlegel's first big job at Carpenter of New England is development of a fully-equipped metallurgical department. The new chief is wasting no time taking advantage of the low production demands of the present quiet market to get set for heavy production demands.

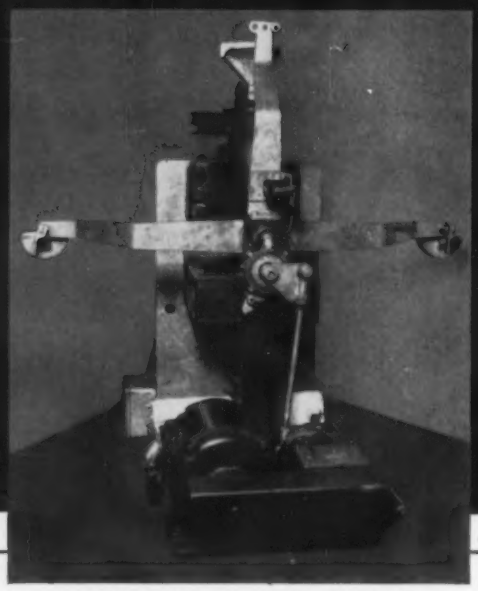
He feels that in a few years the new plant will meet virtually all the needs of a specialty steel plant — a duplicate of Carpenter's Reading plant. As Mr. Schlegel points out, "Many steels in great demand today—steels for elevated temperatures, electronics, glass-sealing, and bimetals are a few examples—were never heard of 10 years ago. And 10 years from now, we'll be making steels we never dream of today."

He Values Service—He is convinced that a steel producer can help a customer properly only if the producer intimately knows and understands the customer's problems. Consequently, he has been spending some 25 pct of his time with customers in the field.

Despite his reputation as a top metallurgical he insists that "I'd exchange what I know for what I don't know."

CLEVELAND is the name and the place for ABRASIVES

Why not buy Abrasives on Fact?



Here at Cleveland, we feel that a buyer of metallic abrasives should be able to do just that.

The breakdown tester we use is shown herewith, and it's designed to separate the fact from the fiction.

After 100 passes through this tester, at 7200 r.p.m., we *know* how good our al rasives are and how long they will last.

This tester, combined with our other extensive laboratory equipment, is an integral part of our production control system.

All of it, of course, is working hard every day to give you top-quality, long-life, economical Metallic Abrasives . . . based on fact.

There are more details in our catalog, which is yours for the asking.

COMPARATIVE TEST REPORT

MATERIAL TESTED — S660 CHILLED IRON SHOT

A - Cleveland Metal Abrasive B - Competitors C - Competitors

SCREEN ANALYSIS

U.S. No.	S.A.E. Spec.	A	B	C
8	0	0	0	0
10		35.5	54.0	36.0
12	85	60.3	36.2	48.0
14	12	4.2	7.7	14.0
Pan	3	0	1.1	2.0

CHEMICAL ANALYSIS

	A	B	C
T.C.	2.72	3.29	2.42
Si	1.13	1.36	1.20
Ph	.056	.380	.130
Mn	.40	.36	.47
S	128	.176	.141

Rc HARDNESS

	A	B	C
Low	58	59	57
High	62	65	62
Average	60	63	59

BREAKDOWN TEST

Thru U.S. No. 10 on U.S. No. 12 — No. of Grams Tested—100 — 100 Passes at 7200 R.P.M.

	A	B	C
12	0	0	0
14	.2	0	.1
16	.4	0	.5
18	4.8	.1	3.5
20	15.6	.2	9.4
25	24.4	7.9	20.7
30	13.5	8.4	12.1
35	9.9	10.6	11.5
40	4.1	11.3	6.0
45	2.7	7.1	4.6
50	2.0	14.2	3.4
Pan	13.7	27.6	17.8
Loss	8.7	12.6	10.4

Remarks — C.M.A. material best by test. *B. M.*

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4. "A" Iron 5. Hi-Strength "B" 6. Chilled Iron 7. Drawn Steel

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How, When Recession Started

New orders for durables actually reached their peak seven months before total business reached its high point.

Durables also have contributed most to total inventory cuts.

▪ Now that the downturn apparently has run its course, setting the stage for the long, probably slow climb back, it may be time to review just what has happened.

It logically could be called a metalworking recession without stretching the point too much. Certainly manufacturing operations bore most of the brunt, with the metalworking segment leading the way.

On the other hand, many elements of the economy, notably non-durables, services and the farm, held up relatively well.

Lead the Downtrend — In the Dept. of Commerce's Survey of Current Business, it's pointed out that manufacturing operations led the downtrend, and have undergone the sharpest adjustment.

New orders for durables, which hold the key to most metalworking operations, reached their peak in November of 1956, seven months in advance of the high in all business activity.

Down One-Fourth—Since then, new contracts for producers of hard goods have dropped about one-fourth. As a logical result, durable goods manufacturers have reduced their inventories by $2.5 billion. This is more than two-thirds of the total business inventory drop since last September, the Dept. of Commerce indicates.

Reduction of inventories in the durable goods industries was centered in working stocks. Goods in process, reflecting the cutbacks in production, were cut 13 pct. Purchased materials dropped 6 pct.

Rated Still High—The inventory report points out that, in spite of the severe inventory control measures, the ratio of goods to sales was not checked until February of this year. And the current ratio is about as high as it has ever been in recent years.

There is a discouraging implication here. With inventory to sales ratios still high, in spite of cutbacks, it's unlikely that there will be any haste to rebuild stocks before new orders improve.

It's Still Time to Plan Ahead

Betting $1 Billion—Don't miss the significance behind U. S. Steel's announcement that it intends to go ahead with its $1 billion expansion and improvement program.

It points out that, despite today's gloomy picture for most of metalworking, this is no time to stand still.

Of course, it's no time for reckless spending either and there's no denying that few companies are in the position of the Corporation, where the long look can still prevail.

New Facilities Help — But you will notice elsewhere in this issue reports of new steel facilities coming into operation, undaunted by overall low operating rates.

The conclusion is that you can not afford to halt improvement of your manufacturing facilities. In today's markets, and in those of the future, quality and efficiency will pay off, in sales and in production costs.

U. S. Steel believes that this is a good period to make improvements, for one very practical reason: Slack operations mean a minimum of interference with production schedules, with substantial cost savings.

This is in addition to the contribution to the economy that the Corporation will make by going ahead with confidence.

Freight Car Loadings Pinpoint Weak Spots

Sometimes a look at freight car loading is revealing. Right now, for example, it shows the contrast between the booming farmlands and the sagging industrial areas.

For example, loading of revenue freight for the week ended June 14 showed coal loading down 28,421 cars from a year ago. In contrast, loadings of grain and grain products were up 12,195 over the same week in 1957.

Overall, the figures reflect the low level of industrial activity. Miscellaneous freight loadings were down 50,685 from a year ago, ore loading down 38,523 cars, and coke down 5066 cars.

Back on the farm again, livestock loadings were relatively stable, showing an increase of 30 cars from the parallel week a year ago.

Aluminum Engine Comes Closer

All It Needs Is a Little More Research

Automakers and aluminum industry believe the all-aluminum engine is near production.

Cylinder liners are the top problem, but progress is reported.—By H. R. Neal.

▪ The all-aluminum auto engine may be on the verge of production. At least, all the excitement among auto engineers would indicate it.

The advantages of the aluminum engine, with its lighter weight and potential savings in production costs and capital investment, have long intrigued the weight and cost conscious auto industry.

Many Advantages — By direct substitution of aluminum for cast iron, engine weight would be reduced 30 pct or higher. And with less weight to move, performance is increased.

Braking problems are less serious in lighter cars. Smaller and less expensive tires can be used.

In manufacturing, higher finish speeds and feeds are possible. Dimensional accuracy can be held to closer tolerances, reducing or eliminating machining operations. Lower finish allowances are permitted. Handling is easier.

Furthermore, high thermal conductivity of aluminum affords excellent paths for dissipation of heat. This reduces strains and distortion.

There are advantages for the motorist, too. In addition to a lighter, easier-to-handle car, the engine's octane requirements are lowered by several points.

Not Really New—Research on the aluminum engine dates back many years. European automakers for several years have been making aluminum engines. Many are available in the U. S. today. Major U. S. automakers are now moving up to the production decision stage and aluminum engines are in varying stages of development in most companies. (See Box.)

A recent announcement by General Motors of a series of three experimental all-aluminum V-8 engines triggered the current controversy. It was followed up by a series of papers and discussion at the recent meeting of the Society of Automotive Engineers.

(GM's announcement immediately brought an acknowledgment from the aluminum industry of a potential market for more than a billion lb of aluminum per year.)

Cylinder Bore Problems—GM's project was begun to determine "both operating characteristics and durability of lightweight engines." One main problem, the GM spokesmen said, was to find cylinder bore material at a reasonable price.

They pointed out that chrome plating had previously been used as a wear-resistant material in cylinder bores, but its main drawback was cost.

What, then, is the answer? Dr. Lawrence R. Hafstad, vice president, in charge of GM Research Staff, pointed out that use of alumi-

Where Does Aluminum Engine Stand Today?

Two automakers, Ford and Chevrolet, are pushing production of all-aluminum engines for light cars. Others are in varying stages of development. Here is a rundown of probable status:

Chevrolet — From all appearances, the Chevrolet engine is a 6-cylinder, air-cooled, flat, horizontally opposed piston engine. Very probably it is slated to power a light, rear engine car.

Ford—Ford's engine is a 6-cylinder model of more conventional water cooled design. It appears headed for mounting in the front of a light car.

Chrysler—Several designs are under consideration and engines under test, but Chrysler is not as close to production as either Chevrolet or Ford.

Willys—This independent has a flat, air cooled, horizontally opposed piston engine "family." It is said to be flexible as to number of cylinders. A 4-cylinder variation is being used to power Willys' larger, experimental companion to the Mechanical Mule.

American Motors—AMC has a flat, 4-cylinder engine to power a light military vehicle, the Mighty Mite. However, the engine is of an older design and plans have not been made to use it in passenger cars.

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Finally the component parts are factory proof-tested to twice the working load limits—your assurance of maximum strength and safety.

Another valuable feature: all parts remain visible for easy, periodic wear inspection.

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The new ACCOLOY KUPLEX Sling Chains are available in single-leg and two-leg styles and in six chain sizes, from ¼" through ⅞". All chain is made of Accoloy 125 material. All component parts of each assembly are marked and easily identified as to the size of chain with which they are to be used. Components are *color-marked in* **orange** for easy identification.

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Accoloy Shaped Master Link holds its form under loads up to 18% greater than standard round-section link can

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*Patent 2,763,768

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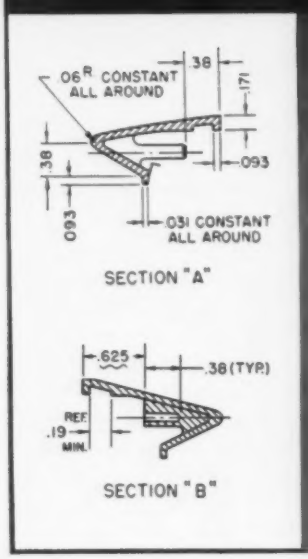

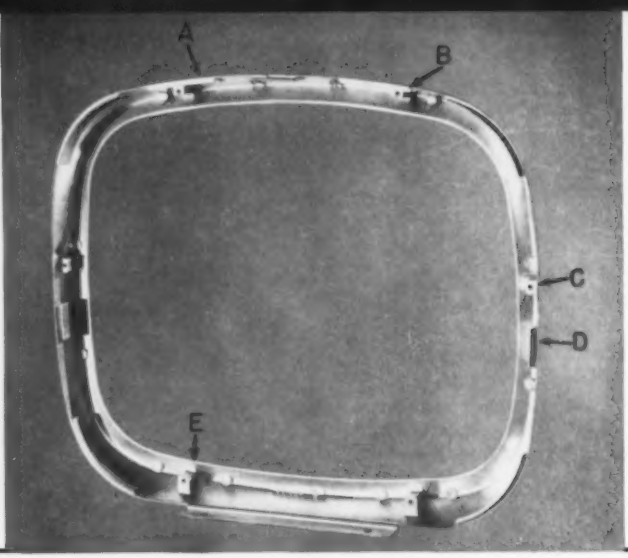

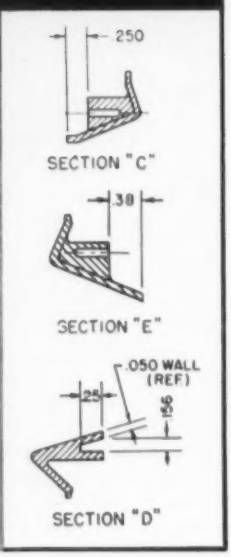

RCA

RCA Victor proves that the lightest metals do not always produce the lightest weight parts. This RCA Victor Portable Television Receiver is built with a ZINC Die Cast bezel and screen mask that weighs less than one pound, yet provides the strength and rigidity necessary for a structural part of the entire housing.

The sharply edged brow, thin wall sections, streamlined shape, compound curves and built-in conveniences for easy assembly are possible only by the die casting process. Die cast of ZINC, this bezel meets every requirement for the modern styling of the RCA Victor Flight-Line Series of receivers.

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HORSE HEAD PRODUCTS ®

Automotive Production

WEEK ENDING	CARS	TRUCKS
June 28, 1958	92,538	16,322
June 21, 1958	84,396	17,110
June 29, 1957	125,909	24,091
June 22, 1957	118,805	22,729
TO DATE 1958	2,235,500	443,800
TO DATE 1957	3,373,100	579,400

*Preliminary Source: Ward's Reports

num engines "depends largely on successful development of castable, wear-resistant aluminum alloys or dependable coatings which may be economically and simply applied and inspected."

The Problem—This is the problem now confronting the automakers and the vitally interested aluminum industry.

Both Alcoa and Reynolds have worked closely with automakers in advancing the cause of "hypereutectic aluminum-silicon alloys." These alloys are defined as alloys containing more than "eutectic quantity of 11.6 pct silicon," and are generally referred to as aluminum-high silicon alloys.

Progress Reported—Alcoa has reported on an alloy containing 20 pct silicon, 2 pct copper, 1 pct magnesium, and 0.5 pct manganese. Reynolds engineers say they have worked with alloys up to 30 pct silicon, but believe the high silicon content unnecessary for automotive use.

Briefly, these are the properties and characteristics of aluminum-high silicon alloys, according to Alcoa's Richard M. Smith.

Hard to Cast—Foundry characteristics are less than ideal. Controlled foundry techniques are required to handle these alloys successfully. Melting and pouring temperatures are high, 1325° to 1350°F for diecastings and from 1400° to 1450°F for permanent mold, semi-permanent mold and sand castings. He says careful techniques can overcome these deficiencies.

Wide Possible Use—Alcoa engineers are cautious in approach to use of the alloy, although talking positively of its use as a material for cylinder liners and of its possibilities as a casting material for engine blocks, cylinder heads, pistons, rocker arms and brake drums. Reynolds engineers are willing to state it will be used for the entire engine.

However, an engineer close to the aluminum engine program for his own company said aluminum producers are still not clear on cost of aluminum-high silicon alloys, are hesitant about committing themselves to a final price. Consequently, he said, it is likely the material will be first used for casting cylinder liners.

Casting Breakthrough—An important breakthrough in the precision casting of cylinder linings has also been claimed. Dr. Fred Bauer, vice president and research director of Doehler-Jarvis Div. of National Lead, says he has developed a method for diecasting.

But he says the problem remains of machining wet cylinder sleeves and the difficulty of their assembly.

He cited another roadblock to the production of aluminum engines. "Based on reluctance of the automobile industry to accept any different designs for cylinder sleeves, what is needed is a new approach," he says. He believes he has it.

New Method—He has developed a method for diecasting a single sleeve or a battery of sleeves connected to a deckplate with these features: No taper in the bore; dimensional accuracy of plus or minus .001 in.

In addition, he says: "Research will continue to produce these sleeves with a thin coat of wear-resistant material, a method which is expected to be appreciably cheaper than chrome plating or molybdenum spraying of the bores."

In casting of aluminum blocks, it appears the first aluminum engines will be cast in the permanent mold process. Automakers contend gas porosity is still a major problem in diecasting such large parts.

THE BULL OF THE WOODS

OH--UH, WHY, I NEVER THOUGHT OF THAT! WHAT'S TH' MATTER WITH ME!
NOW THAT SHOULD BE A GOOD LESSON IN ECONOMY TO THAT GUY--TH' IDEA OF LEAVIN' A LIGHT LIT WHEN HE AIN'T USIN' IT!
IT'LL BE A LESSON IF HE DON'T NOTICE THAT BIG HELPER CARRYIN' THAT LITTLE HANDFUL OF WASHERS FOR THE BOSS!
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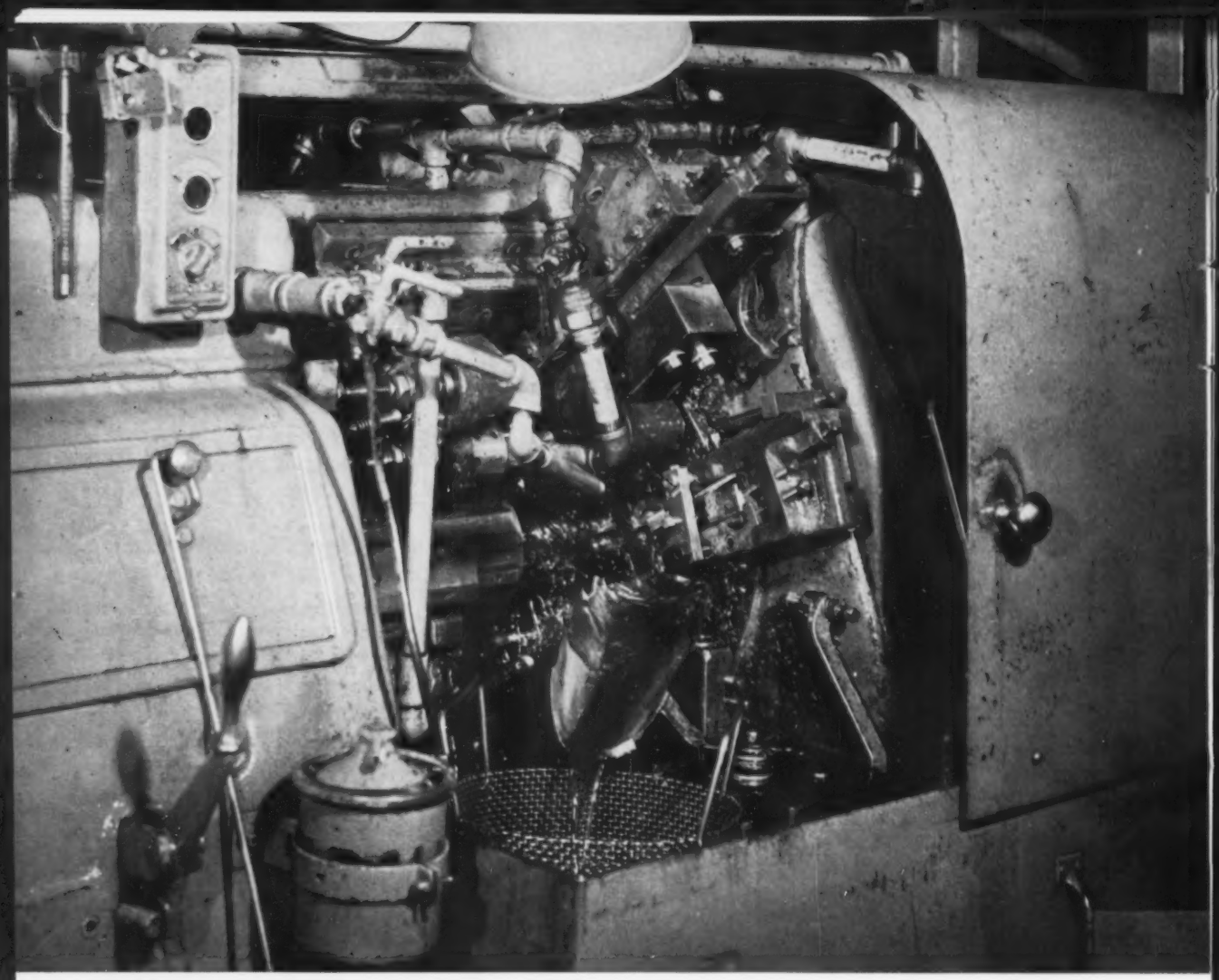

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House May Kill Labor Reform Bill

Chances Slim for Its Passage This Year

"Moderate" labor reform bill, already through the Senate, could be bottled up by a hostile House Labor Committee.

Group, headed by Rep. Barden, has long opposed any labor law changes. — By G. H. Baker.

▪ Fate of the "moderate" labor reform bill passed by the Senate rests in the hands of a hostile House Labor Committee which is showing little inclination to approve it in time for passage this year.

The House committee, headed by Rep. Graham A. Barden, D., N. C., has long blocked any changes in the labor laws. Although under strong pressure from House Democratic leadership, the Administration, and the AFL-CIO to approve a bill similar to one voted by the Senate, the betting is that Rep. Barden won't budge in time to permit passage by Congress.

What's Proposed—In the past there have been the rumblings of moves to force labor legislation out of the stubborn House committee. But House Speaker Sam Rayburn, D., Tex., has, for the time being at least, spiked any such efforts on this bill.

As passed by the Senate, the measure would:

Require public disclosure of union finances through reports to the U. S. Labor Department; require reports by employers and unions both on the use of labor "middlemen" or special consultants for illegal activities; and give the Labor Secretary power to subpoena records when investigating unions.

In addition it would: limit trusteeship of a union local to 18 months in most cases; require election by secret ballot with limits of four-year terms for national officials and three-year terms for locals; provide specific penalties for stealing union funds; outlaw loans to union officials over $1500; and outlaw picketing to extort money from an employer.

Opposition Lukewarm—The bill has been called a "sweetheart" measure by congressional and business advocates of tougher controls over union abuses.

For the most part, it has drawn only mild protest from some branches of the AFL-CIO, which have called it "loosely-written" and "sloppy," while admitting that the so-called "union-busting" provisions they fought were not included.

There is no regulation of union contributions to political campaigns in the measure, although Republican leaders are expecting that organized labor will spend more than $62 million in the 1958 campaigns.

This is a guess, based on the assumption that 10 pct of all money collected by organized labor goes directly or indirectly for political purposes.

Congress Could Stay Through Summer

Holding Action—Congress, with a full head of political steam gathering, is likely to remain at work until Labor Day.

Democratic congressional leaders say privately they hope they can keep their Republican opponents tied up in Washington at least that long. They figure, according to cloakroom talk, that an extra long session will help Democratic candidates in the November elections.

This country's apparent lag in missile and space technology, the current recession, and the prominence of talk about vicuna coats and Persian rugs, gives Republican congressional candidates a lot more ground to make up than the Democrats, these political strategists say.

Rayburn Spearheads—The longer Congress is in session, the less time they'll have to campaign. (All Representatives and one-third of the Senators are up for re-election.)

House Speaker Sam Rayburn, D., Tex., reportedly is master minding the late adjournment.

Plenty Pending—He'll have plenty of work to keep the lawmakers busy if he wants to. As of the end of last week, these major issues were still to be resolved, plus many less well-known but important bills:

Extension of the Reciprocal Trade Agreements Act; reorganization of the Defense Department; omnibus farm and housing programs; the level of appropriations for the foreign aid program; Taft-Hartley Labor Act amendments; a host of appropriations bills and several public works measures.

Other measures to be disposed of include a mineral stabilization program, federal fair trade legislation, antitrust act amendments, and a pending transportation program.

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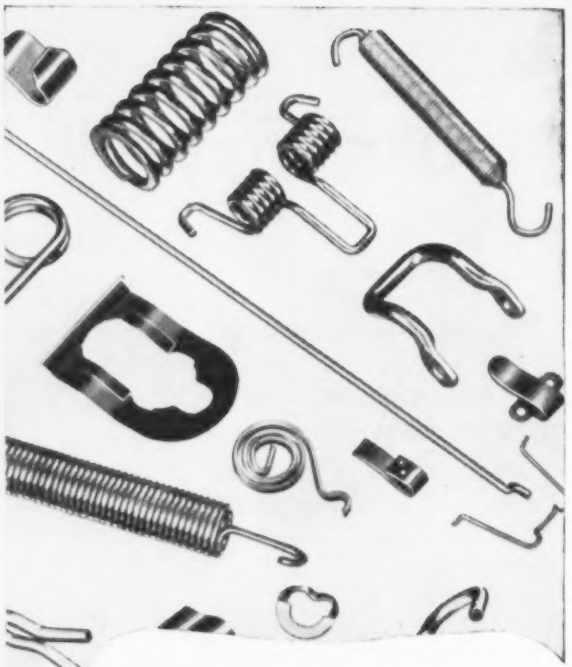

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Selling Guide to Farwest Market

Latest Checklist of New and Expanding Companies

Here's a run-down on Western firms in the market for metalworking products, equipment, and services.

It's a valuable aid in making sales calls.—By R. R. Kay.

▪ Farwestern industrialists are bright-eyed about future markets. Why? People keep coming West. Plants keep sprouting up and expanding. And product needs grow day by day.

Sales managers around the country can use this list of new and expanding companies. These are buyers of metalworking products, equipment, and service:

In Southern California—Aircraft parts—Parker Aircraft Co., Los Angeles. Automatic spraying of cold-rolled steel—Spray-Matic Co., Gardena. Aircraft and missile ground handling and support equipment — Wells Industries Corp., North Hollywood.

Tool and die shops—Advance Tool & Die Co., Los Angeles; Axvall Tool & Diemaking, Burbank; Fritz Koch Tool & Die Mfg. Co., Los Angeles.

Bathroom hand rails—Saferail Co., Los Angeles. Pneumatic and hydraulic equipment — Hydrodyne Corp., North Hollywood. Aircraft fasteners—Duncan Industries, Los Angeles. Load equilizing trailer hitch—Eaz Lift Spring Corp., Sun Valley.

Fabricating and Finishing—Steel fabrication—Stemco Mfg. Co., Van Nuys. Hoppers for industrial trailers and fruit packing equipment—Brogdex Co., Pomona. Cold drawn steel bars — Sierra Drawn Steel Corp., Los Angeles.

Vacuum pumps and vapor compressors—Sutorbilt Corp., Compton. Heaters and tanks—Ace Tank & Heater Co., Los Angeles. Water storage tanks and pressure vessels —Advance Tank Mfg. Co., Gardena. Missile parts—Telecomputing Corp., Chatsworth.

Metalfinishing—Vitri Finish, Inc., City of Industry. Aircraft parts—Wesmont Mfg. Co., Burbank. Automobile batteries — Gould-National Batteries, City of Industry.

In Northern California—Missile ground handling and launching equipment—Food Machinery & Chemical Corp., San Jose. Steel fabrication — Consolidated Engineering & Manufacturing Co., San Leandro; Pacific Coast Engineering Co., Alameda. Trucks and trailers —Cook Bros. Truck & Equipment Co., Oakland.

Nonferrous foundry — Standard Brass Foundry, Oakland. Window screens—Ry-Lock Co., Ltd., San Leandro. Machine shop—Rennie's Machine Shop, San Leandro.

At Portland—Metal fabrication Universal Fabrication Co. Broom-winding machines — Ben-Ko-Matic Manufacturing Co. Aluminum storm windows—All West Aluminum Co. Western Foundry Co.

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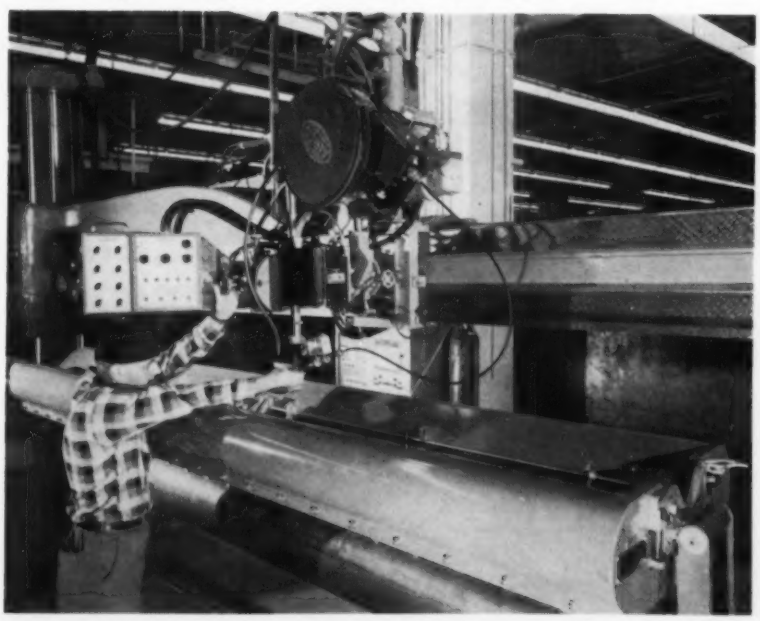
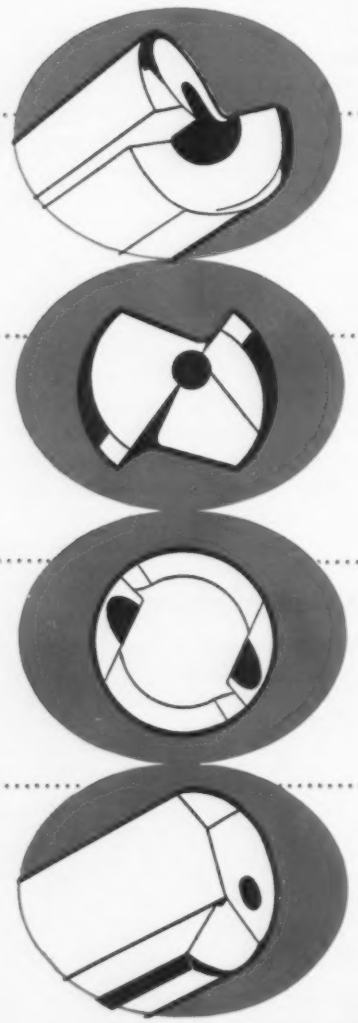


ELECTRONIC CONTROL: Large Weltronic tungsten inert gas fusion welder, built to Boeing Airplane Co. specifications, joins difficult-to-weld alloys of titanium, stainless steel, aluminum, and magnesium. Its arc current, carriage speed, and wire feed are controlled electronically.

NOW... THE ONLY COMPLETE LINE OF GUN DRILLING TOOLS

Enables you to specify an application-engineered carbide gun drill or gun reamer to suit your particular production, material and finish requirement. Every tool in the precision Star line has been wear-life proven in quantity runs on production parts in both the Star Cutter gun drill development laboratory and metal-working plants.



® Starbore DRILL

Has the exclusive trepanning action. Produces precision through-holes from the solid in cast iron, bronze, aluminum and some stainless steel parts. Two-flute carbide design.

Starbore CENTER-CUT DRILL

Produces no pin. For precision blind holes, holes that intersect cross holes, and applications where a pin is not desirable. Two-flute carbide design.

Starbore REAMER

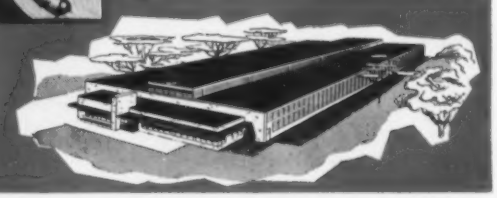
A gun reamer that provides the ultimate in finish and wear life. For enlarging previously drilled or cored holes to finish size in one operation. Two-flute carbide design.

Star GUN DRILL

A gun drill of conventional design for drilling precision holes from the solid in steel. Made in sizes from 3/16-in. to 1½-in. diameter. Single flute carbide design.

Starbore Gun Drilling Services . . . Automated setups for large production runs. Quick-change fixtures for job-lot work. Send blueprints for prompt quotations.

Write for this catalog file giving complete information on Starbore gun drilling tools.



Star Cutter Company

Originators of Accurate Unground-Form Hobs

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Telephone: Detroit, Kinwood 3-4500

Low Volume Dogs Tool Builders

Depreciation Rates and Imports Add to Plight

Shipments continue to outstrip new orders in the metal cutting tool business.

Backlogs have sagged to under three months on an industry average.—By E. J. Egan, Jr.

■ Word that the recession is supposed to be sliding back into the history books still hasn't reached the machine tool industry.

The National Machine Tool Builders' Assn. estimates net new orders for both metal cutting and metal forming machines totaled only $28 million in May. That's a shade under the April figure of $28.3 million, and it's only 52 pct of the $53.7 million builders raked in during May, 1957.

The Breakdown — The May, 1958, breakdown of net new orders by tool types looks like this: $22 million for metal cutting tools compared to $22.9 million in April and $41.4 million a year ago; $6 million for metal forming equipment compared to $5.4 million in April and $12.3 million last May.

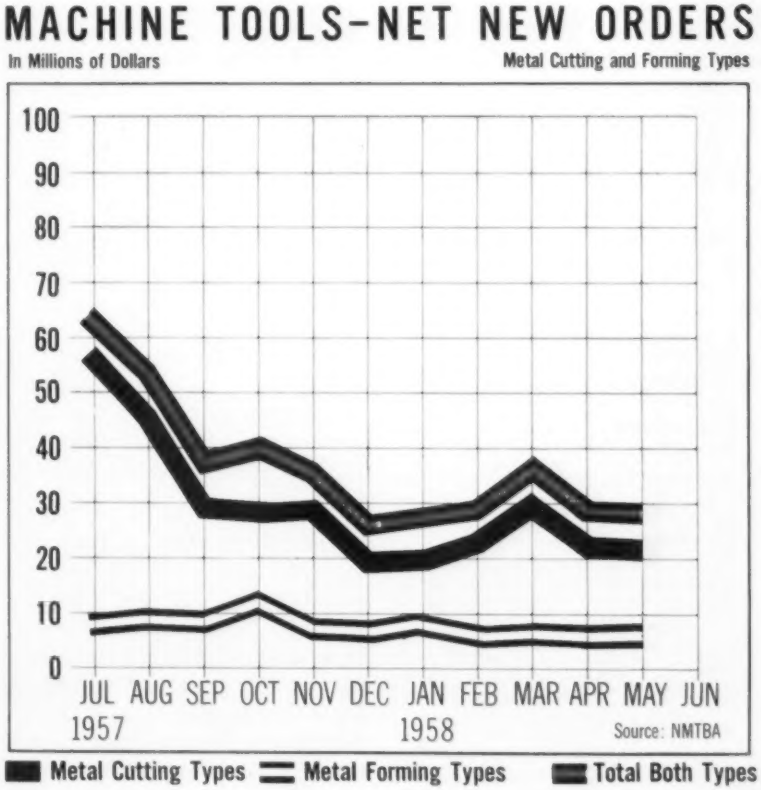
But it's the persistently poor plight of the industry that has put about 25,000 production workers off builders' payrolls. It shows up more clearly when you consider that total net new orders for all types of tools averaged only $29.5 million per month for the first five months of this year. In the same 1957 period, the monthly average was $67.6 million.

Backlogs Still Falling—A glance at monthly shipments shows that they continue to outstrip new orders by a goodly margin. May shipments totaled an estimated $50.4 million for both cutting and forming machines. The figure includes deliveries to both domestic and overseas customers. The comparable total for April was $50.9 million; for May, 1957, it was $104.3 million.

Builders want it known that rarely, if ever, have they been in a better position to give prospective customers prompt delivery. Makers of metal cutting equipment average about 2.7 months' work on hand, but there are many with virtually no orders in the house. Forming-machine builders are a little worse off, if anything. Their average backlog stands at 2.1 months' production.

The Roadblocks — The factors compounding the industry's woes haven't changed any. Builders feel more strongly than ever that the outmoded depreciation policy of the Internal Revenue Service is the biggest roadblock in the path of increased new orders.

Imports of foreign tools make up another ever-growing threat to actual survival of some U. S. builders, they say (See p. 26). But those firms who'd like to solve the problem by boosting import duties may have to find other survival fare; the Administration's lower-tariff aims seem to have the backing of most Congressmen.

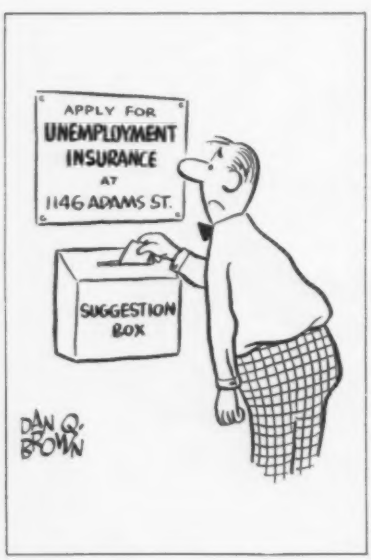


INDUSTRIAL BRIEFS

Wheeling Day—June 21 marked the 38th anniversary of the incorporation of Wheeling Steel Corp. The incorporation was effected in Delaware in 1920, with the merger of the LaBelle Iron Works of Steubenville, O., the Whitaker-Blessner Co. of Wheeling and the Wheeling Steel & Iron Co. of Wheeling. Authorized capital was $100 million.

Earn and Learn — Hughes Aircraft Co.'s plants have drawn 130 educators and students to begin studies of science-in-industry. The summer program is designated to help strengthen the U. S.'s scientific education system. They will attend a detailed 10-week lecture-seminar course while holding salaried jobs in Hughes' research and development laboratories and production facilities.

Land and Sea—The Army has awarded a $380,862 contract to the Ingersoll Kalamazoo Div. of Borg-Warner Corp., Kalamazoo, Mich. The contract is to develop two wheeled amphibians of five and fifteen-ton payload capacities, respectively, designed to add greater mobility and efficiency to Army amphibious resupply operations.



High Karat Line—The Abrasives Div. of Elgin National Watch Co., Elgin, Ill., is expanding its industrial diamond line to include a complete assortment of diamond wheels. New line is part of an expansion program whereby the Division has become a specialist in both diamond and carbide products used in cutting, grinding and finishing.

Second Story Job—A new stainless steel office building, which emphasizes the vertical treatment of curtain wall panel construction in a two-story building, has been completed at the Dunkirk, N. Y., Works of Allegheny Ludlum Steel Corp.

Super Sabre Project—A contract for modification of pylons for the F-100 Super Sabre has been awarded Temco Aircraft Corp. by the Air Force. Work is underway, and completion is scheduled within a few months. The contract is valued at approximately $1.5 million.

Seek SAGE System—Burroughs Corp. has a contract for $17.4 million from the U. S. Air Force for construction of 24 coordinate data processing systems to be used in the SAGE system of continental air defense. The contract brings to 66 the number of data processing systems the firm has contracted to build for the SAGE system.

Lab Going Up—Union Carbide Corp. will proceed with construction on the Union Carbide Chemical Co. Technical Service Laboratory at its Westchester County property at Eastview, near Tarrytown, N. Y. Construction work will begin within six to eight weeks. The laboratory will be completed by late 1959 or early 1960.

Toronto Territory—KSM Products, Inc., Merchantville, N. J., manufacturers of stud welding equipment, accessories and welding studs, have established a new manufacturing plant and sales office in Toronto, Ontario. This new facility is known as "KSM of Canada, Ltd." and is located at 379 Bering Ave.

High Powered Plans — General Electric Co. will build a new $1 million High Voltage Laboratory in Philadelphia. Construction will begin immediately, with completion scheduled for July 1959. It will contain facilities for testing switchgear products rated 750,000 volts and higher.

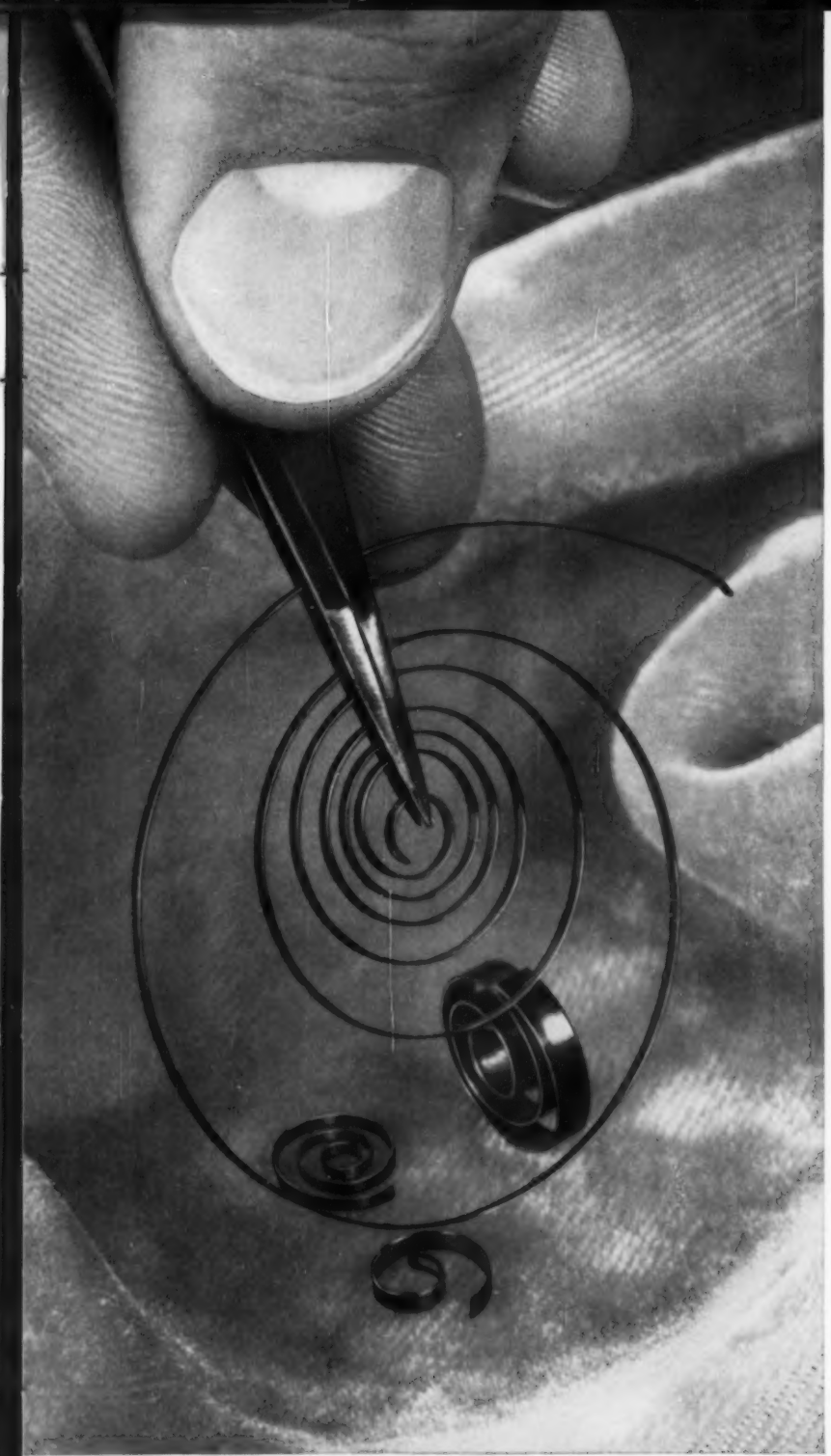
Ship to Shore—Burroughs Corp. has a $1.7 million contract from AC Spark Plug Div. of General Motors for the design and fabrication of pre-launch data computers to be used in the Navy Regulus II missile program. AC is developing a self-contained inertial guidance system for Regulus II. The missile is designed for launching from submarine or ship.

Cast in New Role — Elected president of the Alloy Casting Institute for the coming year is P. L. McCulloch, Jr., president, Electro-Alloys Div., American Brake Shoe Co., Elyria, O. J. B. Dear, general sales manager, The Duraloy Co., Scottdale, Pa., was elected vice president.

Nashville, Sao Paulo Split — A one-half million dollar expansion program will provide increased facilities at two Ferro Corp. operations. Scheduled for expansion are the firm's Brazilian subsidiary, Ferro Enamel S. A., Sao Paulo, Brazil, and the Ferro Fiber Glass Division located in Nashville, Tenn.

Train Headed West—A new 86-in. hot strip mill roughing train has been built by Mesta Machine Co., Pittsburgh. It will be installed at the Fontana, Calif., Works of Kaiser Steel Corp. and integrated with an existing finishing train.

Natrona Bound—In anticipation of increased production and sales of its corrosion resistant products for the construction and industrial maintenance markets, Pennsalt Chemicals Corp. will move the sales department and research and development activities of the Corrosion Engineering Dept. to the Natrona, Pa. plant in September.



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WAGNER LITHO MACHINERY, Secaucus, N. J.; metal decorating equipment • ATHENIA STEEL, Clifton, N. J.; flat, high carbon spring steels • REYNOLDS WIRE, Dixon, Ill.; industrial wire cloth

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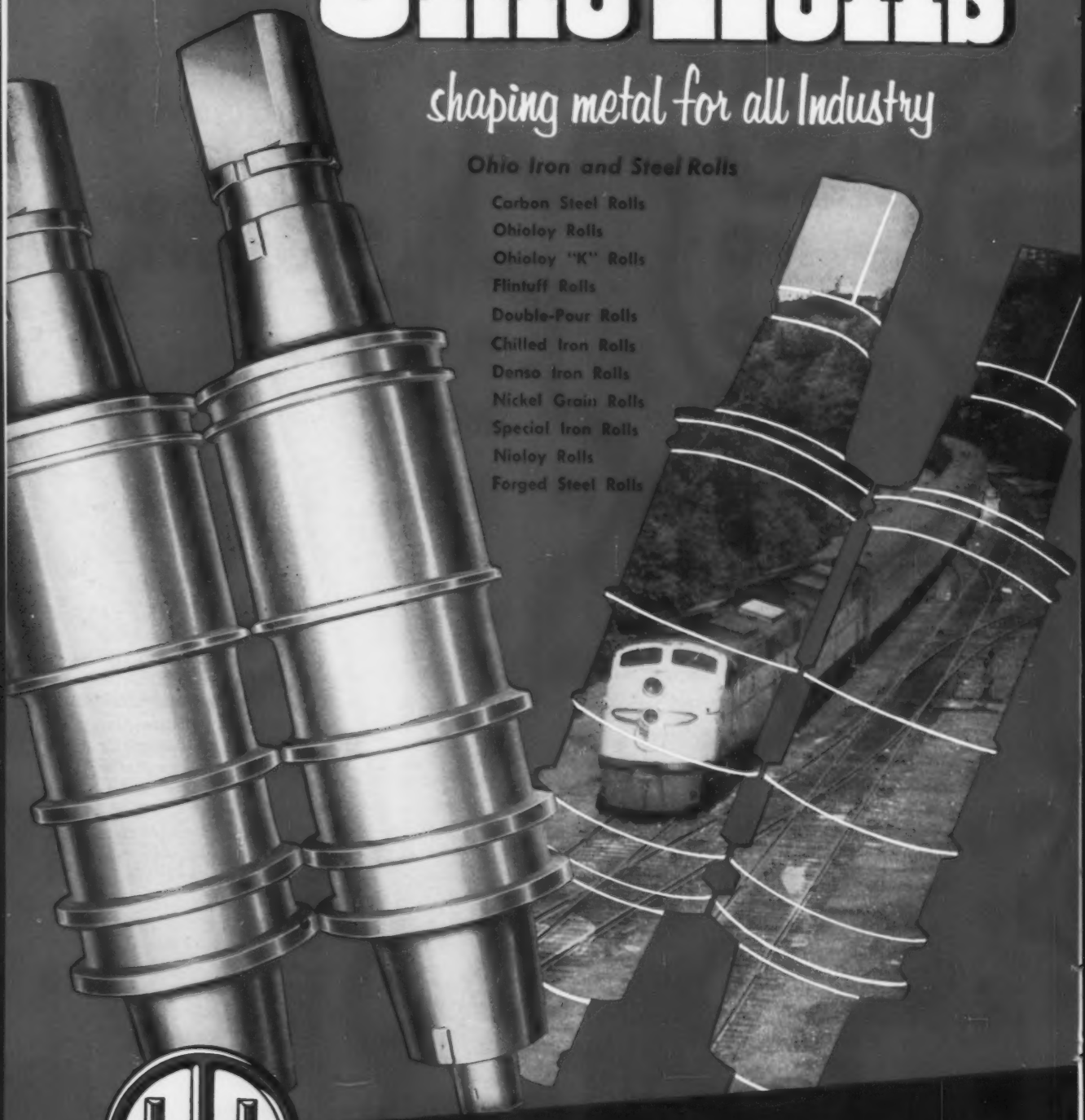
- Forged Steel Rolls



THE OHIO STEEL FOUNDRY CO.

LIMA, OHIO

Plants at Lima and Springfield, Ohio

LIMA... Virtually at the center of the steel industry

OR22

O. L. Dunn, named general manager, Motor and Generator Div., General Electric Co., Schenectady, N. Y.

N. H. Collisson, elected president, Ormet Corp., New York.

R. A. Niemi, appointed executive vice president and general manager, Allied Products Corp.

W. P. Burns, named manager, Cleveland Works, National Malleable & Steel Castings Co.; **L. G. Blackmon,** named general superintendent, Sharon Works.

A. Stewart, Jr., appointed manager, Industrial Dept., Nuclear Metals Div., National Lead Co.

C. C. Brumbaugh, appointed vice president, Diamond Alkali Co., Cleveland; **R. C. Sutter,** named director, engineering.

A. K. Thomas, named general manager, construction equipment, Blaw-Knox Co., Pittsburgh.

L. B. Wohlgemuth, appointed general sales manager, Tubular Products Div., The Babcock & Wilcox Co., Beaver Falls, Pa.

H. G. Knuth, appointed manager, New Product Research Dept., Lyon Metal Products, Inc., Aurora, Ill., headquarters.

J. F. Kotchian, C. M. Richardson, and **W. F. Fischer,** appointed district manager, The Lincoln Electric Co.'s North Haven, Conn., Franklin, Pa.; and Phoenix, Ariz., offices, respectively.

R. R. Giler, appointed product planning specialist, Welding Div., Westinghouse Electric Corp.

R. L. Chamberlin, appointed director, engineering, Research-Cottrell, Inc., Bound Brook, N. J.

H. J. Smith, appointed special services consultant, Berry Steel Corp., Kenilworth, N. J.

C. H. Leet, now heads marketing of electric products battery-charging equipment, Exide Industrial Div., The Electric Storage Battery Co., Philadelphia.

Major General C. C. Jerome USMC who will retire shortly as Commanding General, Aircraft, Fleet Marine Force, Pacific, is joining The Budd Co. as director of industry development.

W. H. Thomas, promoted to general superintendent, Coke & Iron Div., **J. S. Dods,** to asst. general superintendent, and **R. W. Hanlon,** superintendent, Coke & By-Products Dept., Pittsburgh Coke & Chemical Co., Pittsburgh.

H. W. Mollison, appointed district sales representative, Phoenix Steel Tube Div., Phoenix Iron & Steel Co., subsidiary of Barium Steel Corp., Phoenixville, Pa.

C. R. Tyson, elected executive vice president, The Colorado Fuel & Iron Corp.

F. R. Widmer, named manager, Commercial Research Div., Republic Steel Corp.

R. A. Warfel, appointed vice president and works manager, Nelco Tool Co., Inc.

RED CIRCLE Rolls ALLOY-CHILLED

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Rolling Mill Equipment

For more than 50 years Hyde Park Steel Mill equipment has been helping American industry lead the world — equipment such as—

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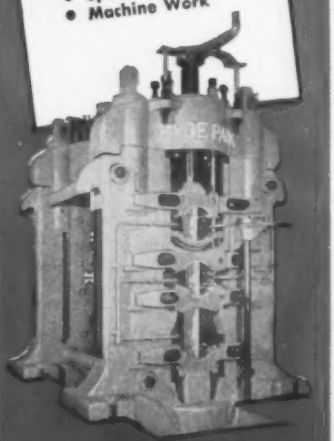
- Guillotine Shears
- Sheet Mill Shears
- Roll Lathes
- Special Machinery
- Machine Work



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ROLLING MILL MACHINERY

GRAY IRON CASTINGS

L. V. Smith, appointed district sales manager, Cleveland, Robertshaw Thermostat Div., Robertshaw-Fulton Controls Co.

F. S. Briggs, appointed manager, Tube Turns, Louisville, Ky., a division of Chemetron Corp.

John Wambold, appointed chief metallurgist, Alloy Surfaces Co., Wilmington, Del.

H. V. Menking, named general director, product development, Reynolds Metals Co., Richmond, Va.

Nicholas Chernik, promoted to asst. chief metallurgist, The Alloy Tube Div., The Carpenter Steel Co., Union, N. J.

R. P. Vartan, appointed comptroller, Chrysler Corp.'s Airtemp Div., Dayton, O.

C. T. Fettel, appointed superintendent, Merchant-Skelp Mill, Fontana, Calif., plant, Kaiser Steel Corp.

A. E. Bardwell, appointed director, National Accoun' Sales Program, Brainard Steel Div., Sharon Steel Corp.

The Detroit Controls Div. of American-Standard has reorganized its sales-department into a Sales and Marketing Group. **F. G. Coggin,** becomes general manager, sales and marketing; **F. J. Kreissl,** named marketing and planning manager; **A. L. Fuller,** becomes sales manager, and **W. H. Hohmeyer,** appointed administration manager.

P. E. Fedeles, appointed sales engineer, metalworking industry, western Michigan, Latrobe Steel Co., Latrobe, Pa.

C. A. Wagner, named Philadelphia district manager, Wire Rope Div., John A. Roebling's Sons Corp.

S. F. Hatch, appointed sales manager, standard pipe products, and **R. W. Mueller, Jr.,** district

The PROOF of DSC STEEL is in its PERFORMANCE ON YOUR JOB

THE AP PARTS CORPORATION
TOLEDO 1, OHIO
May 29, 1958
Mr. V. E. Bates, Vice President-Sales
Detroit Steel Corporation
Detroit 9, Michigan
Dear Mr. Bates:
Since 1954, following the completion of your Portsmouth 54" Cold Mill, you have become one of our important suppliers of CR sheet coils for our exhaust and tail pipe manufacture.
Over the years, our association has been very satisfactory. Your quality has been consistently good and your service excellent. Your mill people have been most cooperative, and we especially like the attention given to our needs by your Toledo office.
We have enjoyed doing business with the Detroit Steel Corporation and hope our pleasant relationship may continue for many years to come.
Sincerely yours,
THE AP PARTS CORPORATION
R. W. Carnahan
Steel Buyer

DSC *AccuRolled*™ CR SHEET COILS

4 yr.-5 mo. **Job-Performance Record** on AP PARTS Exhaust and Tail Pipes

January '54 through May '58

Score 99.9% Plus

A WORD ABOUT THE AP PARTS CORP. — This long-time customer, with plants in Toledo, Ohio, Grand Haven, Michigan, and Culver City, California, is the world's largest manufacturer of mufflers and exhaust and tail pipes in the automotive replacement field. AP subsidiaries also supply these components to car factories for original equipment.

SOMETHING ABOUT "PIPES" — "Pipes" are everyday automotive necessities . . . an indispensable part of the exhaust system which insures efficient engine performance and motoring safety and pleasure. Thanks to the engineering, production and marketing skills of progressive manufacturers like The AP Parts Corp., "pipes are on tap" at moderate cost at car service centers everywhere.

"Pipes" are actually lengths of electrically welded steel tubing . . . specially sized and bent into complicated shapes to fit cramped clearances between body and frame of individual car makes and models. AP makes over 1,000 different pipes for the cars on the road today . . . plug or ring gauged to five-thousandths tolerance.

THE RECORD — Deliveries: initial shipments, January 1954; beginning March 1954, monthly without interruption. Cumulative weight: thousands of tons. Rejections during these 4 years and 5 months: a single coil in 1955; one in 1956. Here are the job-performance scores year by year:

1954.....100.000%	1956..... 99.828%
1955..... 99.801%	1957.....100.000%

1958 (latest report to 6/1) 100.000%

PART PLAYED BY DSC STEEL — DSC AccuRolled CR SHEET COILS provide the essential combination of uniform gauge and temper and consistent weldability for non-stop roll-forming, welding and shaping operations . . . as in "Pipe" fabrication. Add manufacturing "savvy" like AP's and the stage is set for high-scoring job-performance and low unit production costs . . . another example of customer-supplier teamwork "on the job."

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Hot Rolled and Cold Rolled Sheets • Low and Medium Carbon
Manufacturers' Wire • High Carbon Specialty Wire • Aluminum Cable Steel
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MILL DIVISION: DETROIT, MICH., HAMDEN, CONN.

Cold Rolled Carbon Steel Strip
Flat Cold Rolled Carbon Spring Steel

35TH ANNIVERSARY YEAR DSC

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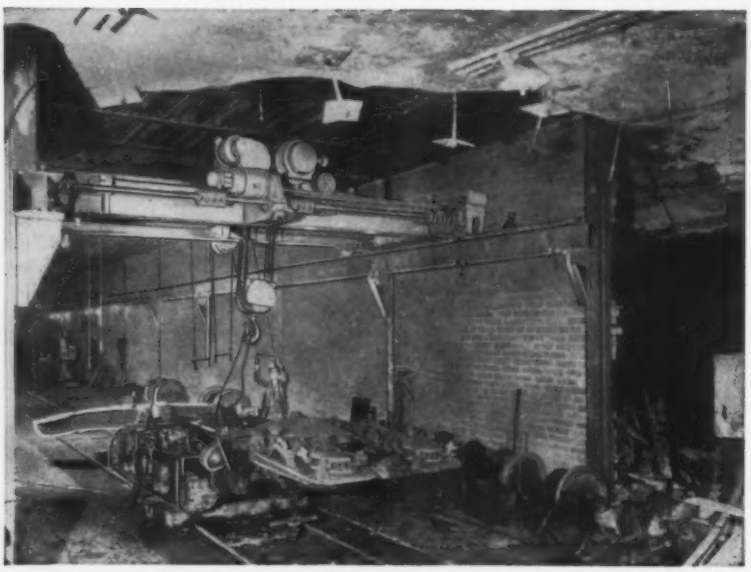
SHEPARD NILES
CRANE

Moving loads through the air
350 FT. UNDERGROUND



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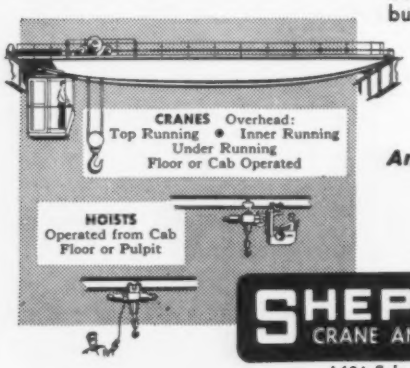

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CRANE AND HOIST CORPORATION
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manager, Pittsburgh district sales office, Spang-Chalfant Div., The National Supply Co.

J. O. Alexander, named asst. manager, baking and milling market, Packaging Div., Reynolds Metals Co., Richmond, Va.

W. S. Jakubowski, elected executive vice president and general manager, Superior Tool & Die Co.

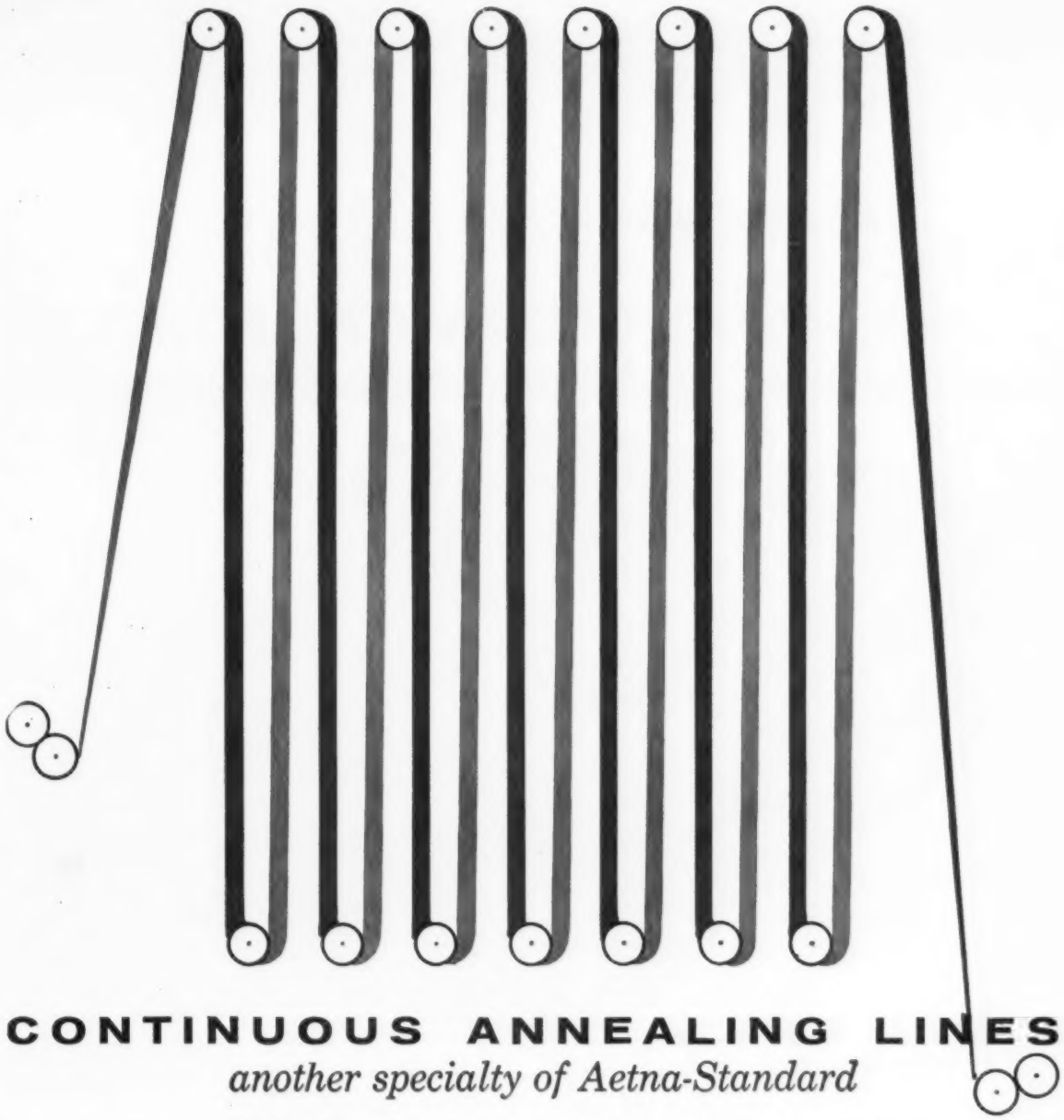
R. Y. Moss, appointed manager, by-products and Lukenweld fabrication sales, Lukens Steel Co., Coatesville, Pa.; **Lot Seacat,** named asst. controller, management services.

G. A. Peck, named branch operations manager, Sales Div., Bryant Mfg. Co., Indianapolis headquarters.

OBITUARIES

D. E. Cohn, vice president and treasurer, Chicago Gear Mfg. Co.

H. A. Kenworthy, 73, retired executive, Tube Reducing Corp., Wellington, N. J.



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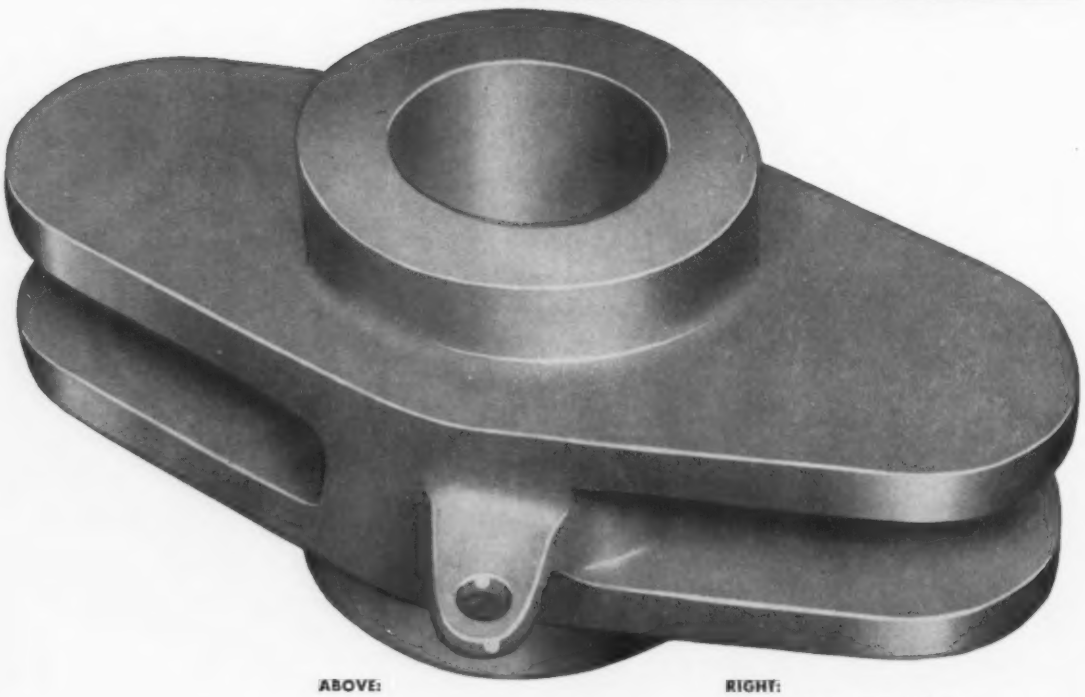
BEFORE YOU SAY . . .

"IT CAN'T BE CAST"



ABOVE:

Automatic Winch brake pawl carrier.

Previous cast weldment required costly machining. ESCO Shellcasting eliminated major machining and effected considerable savings.

RIGHT:

Transmission Shifter Fork.

As formerly cast the fork tip pads posed difficult alignment problems during machining. ESCO Shellcast made possible the casting of the fork tip pads to size and in alignment, eliminated machining, reduced the unit price.

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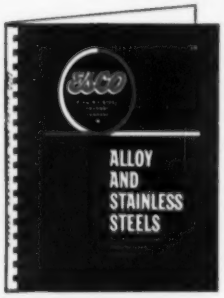

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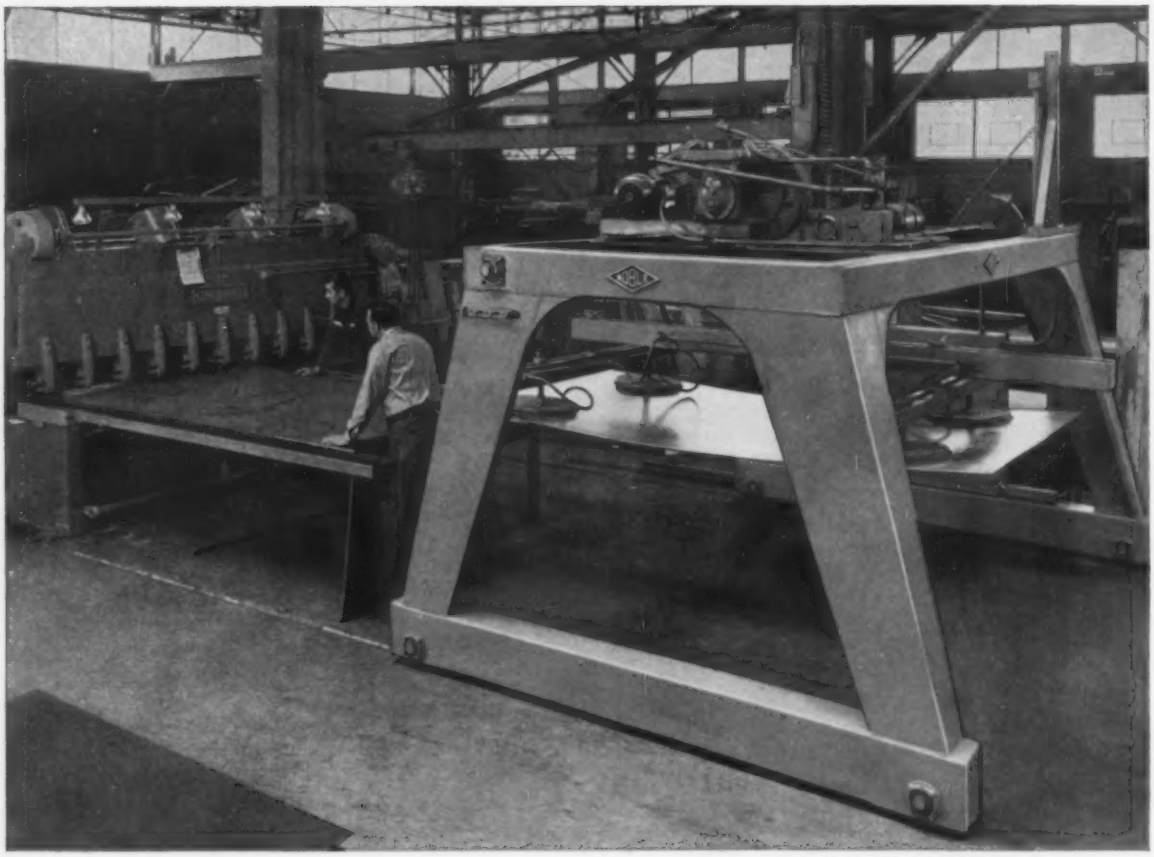


How Chicago Steel Service provides better service with a NOBLE *Automatic* PLATE HANDLER

A plate shear is essentially a fast-operating machine, but out-dated crane and sling "man-handling" methods of feeding it can really bottleneck the operation. This is bad enough in a fabricating plant, but even worse in a steel warehouse where prompt delivery is the sacred link that wins and holds customers. Chicago Steel Service Company, "The House of Stainless," did something about it. They installed a fully-automatic NOBLE Plate Handler that picks up sheet or plate from any selected pile, carries it to the shear feed table and deposits it—at the touch of a button. It has a capacity of 3,000 lbs., is equipped with a rotatable lift beam so sheet can be fed for either edge or end shearing. It handles plate to 10′ in length edgewise, up to 30′ or more lengthwise. Its vacuum cups handle any type of sheet or plate (even austenitic grades magnets can't touch) without marring or jimmying the edges.

Results? Far faster shearing for earlier deliveries, an efficient crew that spends its time shearing safely and profitably rather than wrestling plate, no crane standby time—and happier customers.

If you are fabricating or processing sheet or plate, it may pay you well to investigate NOBLE handling equipment. Bulletin 500 gives the facts—why not write for your copy now? Please address Dep't I7.

NOBLE COMPANY

P. O. BOX 1979 • OAKLAND 4, CALIFORNIA

Automatic Controls Guarantee Top-Quality Carburizing

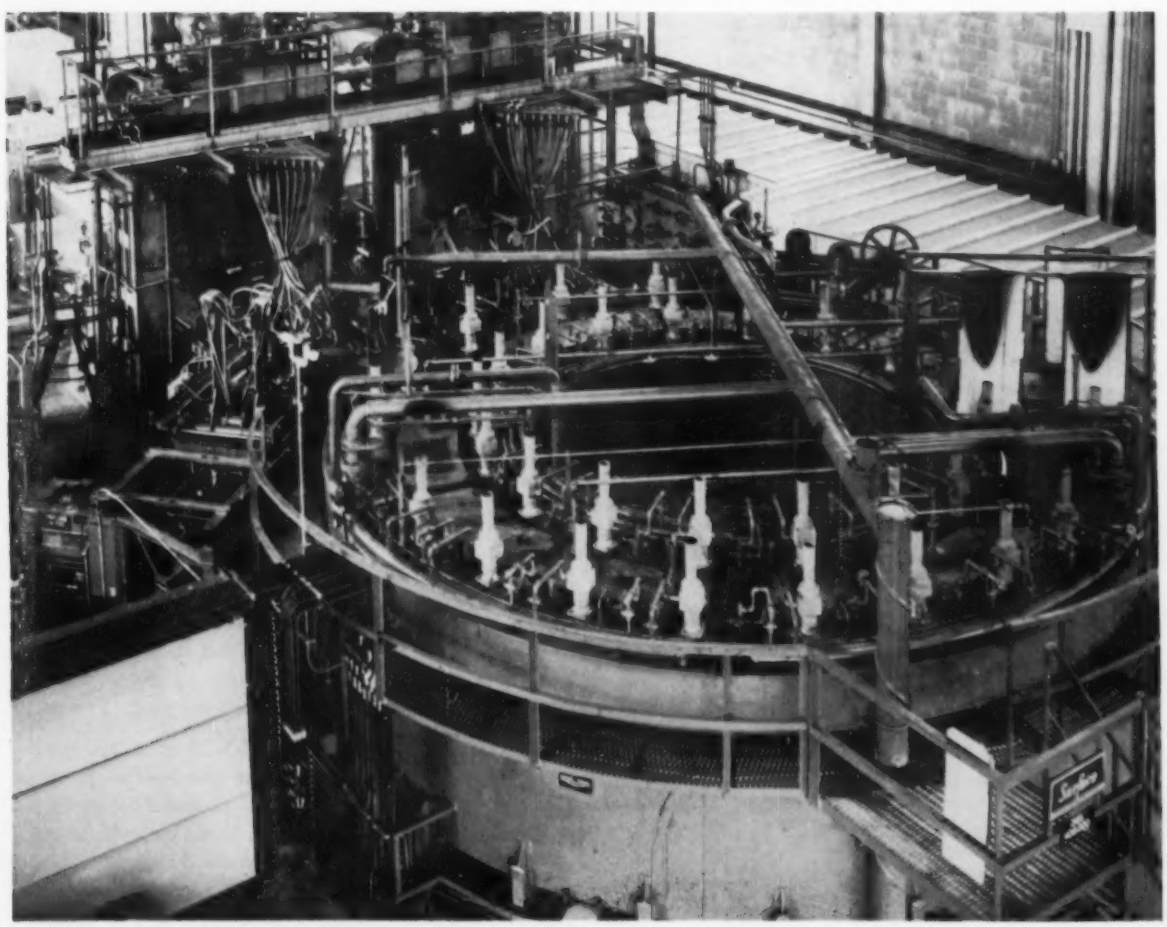
By P. M. Unterweiser—Metallurgical Editor

This brand new carburizing line features automatic dew point control, eliminates variation in carbon potential.

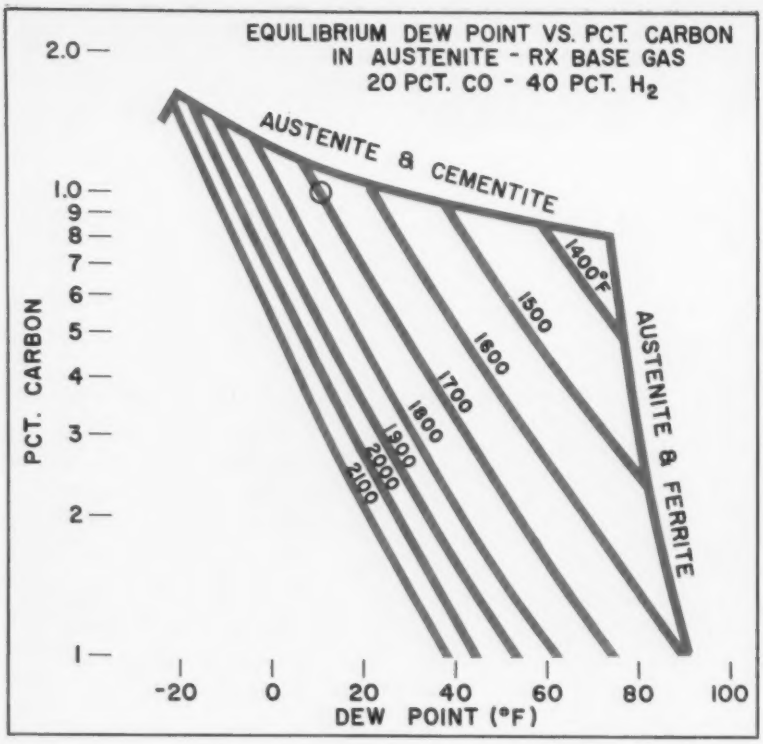
Along with other new features, the controller provides fool-proof carburizing that operates automatically around the clock.

▪ It is mighty uncommon to find a gigantic heat treating operation whose principles and practices can be readily applied to the small- and medium-sized plant. Bigness, as a rule, describes the exceptional installation—the one in a million—that holds little that is helpful for the average heat treater.

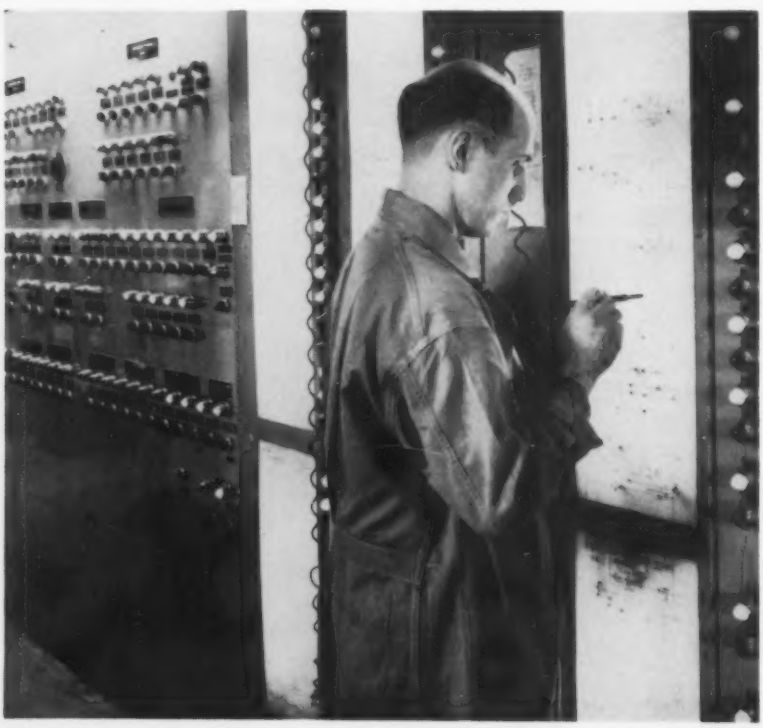
Here is a different kind of exception. It's the new, fully automated carburizing and heat treating line at The Timken Roller Bearing Company's railroad bearing plant in Columbus O. Despite its bigness, the entire operation is packed with features that could prove just as valuable to a much smaller installation. Or, for that matter, to any heat



HARDENING EQUIPMENT: Discharge end of rotary hardening furnace ties in with automatic quench presses.



CARBON CONTROL: Using this diagram, it is possible to determine the dew point needed to provide a given carbon potential at temperature.



PROBE: Control panels spot circuit troubles in heat treating line. Operator probes the circuit to find the exact spot of trouble.

treater who does gas carburizing.

Largest Furnaces—The new Timken plant cost over $7 million and can produce 20,000 car sets of bearings a year. It is housed in two buildings that occupy about 200,000 sq ft. And in common with its other features, its carburizing line is also king-sized. It contains two of the largest carburizing furnaces ever built (each unit is 67 ft long and 12 ft wide).

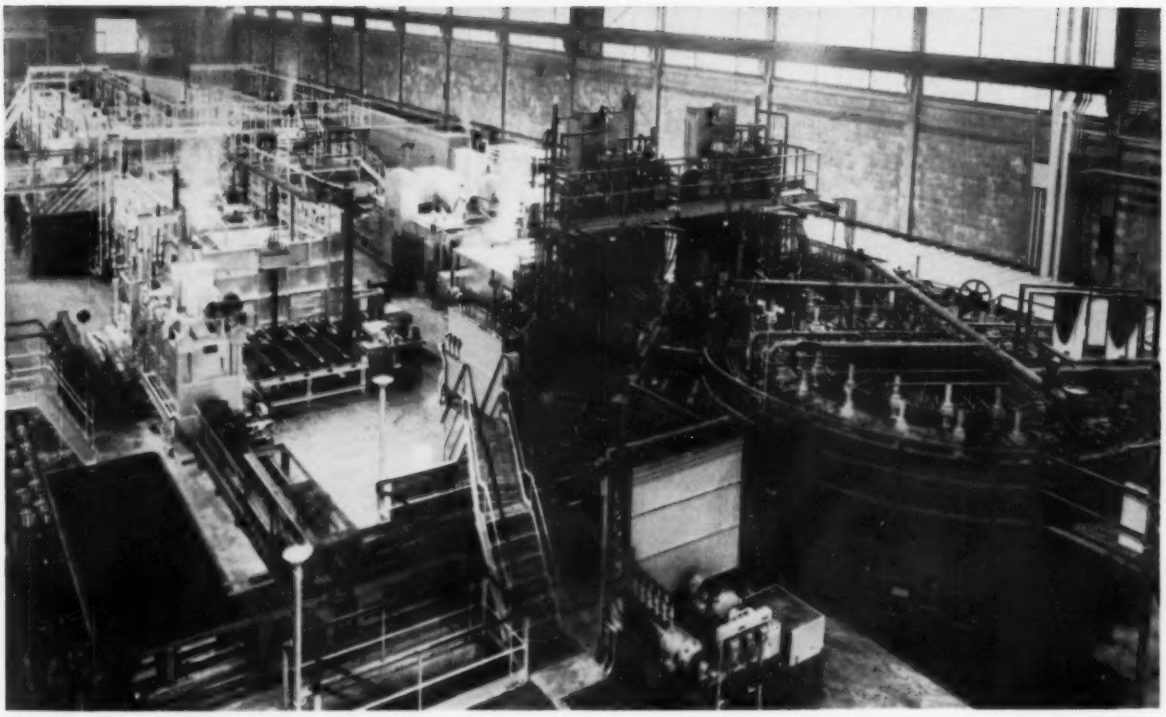
But such statistics are incidental to the heat treating quality that can be maintained for large numbers of parts on a continuous basis. As a leading bearing producer, Timken's standards reflect the unusually high quality that is mandatory for critical parts.

For its railroad bearings, it uses a Krupp steel (made by Timken) containing 3.5 pct nickel, 1.5 pct chromium, and about 0.10 pct carbon. This is a high-strength, carburizing grade. High nickel content provides it with above-average toughness. And on a tonnage basis, this material is carburized to close case-depth tolerances with a surface carbon content of 0.95 (± 0.05) pct.

Close Control — Heat treaters know that such control is hard to come by. With most conventional equipment, it would be extremely difficult to maintain with any degree of consistency. It is achieved in the Timken installation by means of dew point controllers (six to a furnace), along with control thermocouples and automatic regulation of three atmosphere generators.

Of all this equipment, the automatic dew point controller is the heart of the system. In principle, dew point control provides one of the simplest and most direct methods of controlling carbon potential. When properly applied, it is both accurate and reliable.

Hold Dew Point—The trick, of course, is to obtain these optimum conditions and maintain them automatically. At the Timken plant, this is handled by a battery of dew point controllers developed and built by Surface Combustion Corp. They



OVERALL SETUP: All phases of carburizing and hardening are laid out in a continuous production line.

completely eliminate the need for manual control.

To operate the Surface Combustion unit, the desired dew point is set on a dial. Two lights placed near the dial show whether the actual dew point of the furnace atmosphere is above, below, or the same as that desired. Carburizing at 1700°F, the dew point is controlled by altering the ratio of prepared endothermic atmosphere and natural gas.

Fixed Potential — Proportional controllers automatically change the rates of flow of these gases according to the amount of difference between the actual and desired dew points.

Specifically, the Timken carburizing cycle aims for a carbon potential of 0.95 pct. To achieve this level, the dew point of the prepared endothermic gas in the furnace is checked first. Then methane is added to obtain a dew point setting of 11° ± 1.

At 1700°F, according to the accompanying chart, this setting provides the desired carburizing potential or carbon level. In actual operation, maximum case carbon content never exceeds 1.0 pct. On the low side, it will not drop below 0.90 pct.

Four Elements—What goes into the control unit and how does it work? The unit consists of four major components—a dew point sensing element, a refrigerating system, an ac bridge and amplifying circuit, and motor-controlled valve.

The sensing element consists of a wick impregnated with hygroscopic lithium chloride solution and placed in a refrigerated container. A pair of parallel wires carrying current from a transformer is spirally wound around the wick. Current passes between the wires and heats the wick according to the resistance afforded by the dew point of the sample gas.

Cool Gas — To avoid incorrect readings or condensation, sample gas temperature must be held constant at a point between its dew point and the temperature of the sensing element. To accomplish this, the sample gas is refrigerated at a constant temperature. Control tolerance is ± 0.5°F.

The rest of the electronic circuit serves to actuate the signal lights and put the motor-controlled valve into operation when needed.

Thanks to the dew point controller, Timken is able to hold close tolerances on both case depth and carbon content. After carburizing at 1700°F for about 23 hours, all parts are quenched in warm oil and thoroughly washed.

Final Hardening — An 1100°F draw precedes reheating to 1460°F for the final hardening operation. Reheating also involves the use of controlled, protective atmosphere. The carbon potential of the atmosphere is automatically maintained at a level equivalent to the surface carbon content of the parts.

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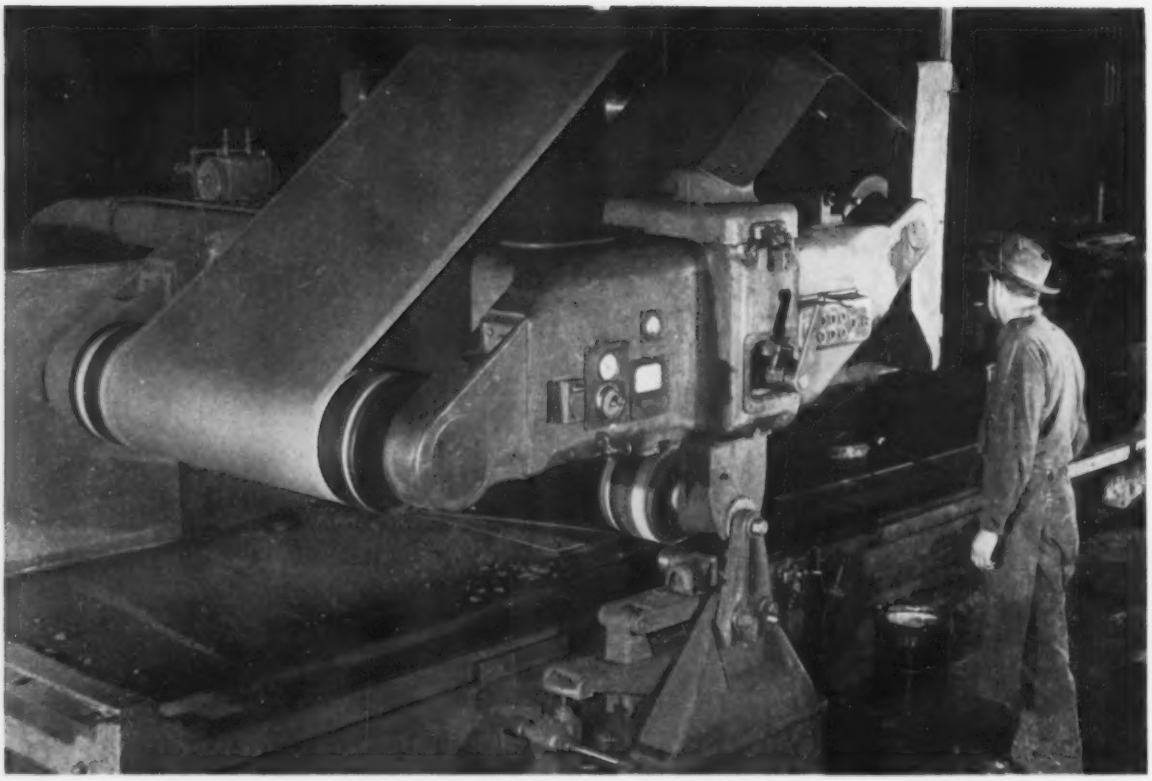


SHEET POLISHER: This machine uses a serrated rubber contact roll for high-speed polishing of steel.

Choose the Right Contact Wheel For Better Belt Grinding

The contact wheel that backs up an abrasive belt often points the way to more effective grinding or polishing.

Make sure you check all the important pointers involved in choosing the best contact wheel for the job.

▪ Contact wheels are among the critical variables in grinding and finishing with coated abrasive belts. These wheels support the abrasive belt and provide the working surface behind it. Despite their importance, they are often the least understood of the major components of a belt operation.

Contact wheels do many jobs in addition to supporting the abrasive belt. Their action and its effects on the belt have a lot to do with cutting efficiency. To some extent, contact wheel performance determines belt life and governs the quality of finish.

Cloth Wheels — Most contact wheels are made of either rubber or cloth. There are three general types of cloth wheels: 1) compress canvas, 2) laminated buff section, and 3) folded and crimped buff section. These wheels are rated as "soft," "medium," or "hard," with variations such as "super-soft" or "extra-hard." They are generally used for finishing and polishing with fine-grit-coated abrasive belts.

Rubber contact wheels are either plain-faced or serrated. There are several designs of serrated wheels, each intended for a specific type of operation.

Some Serrated—A serrated wheel has a series of lands and grooves that usually are angled across the face of the wheel. The width and angle of the lands and grooves vary according to the wheel's intended use.

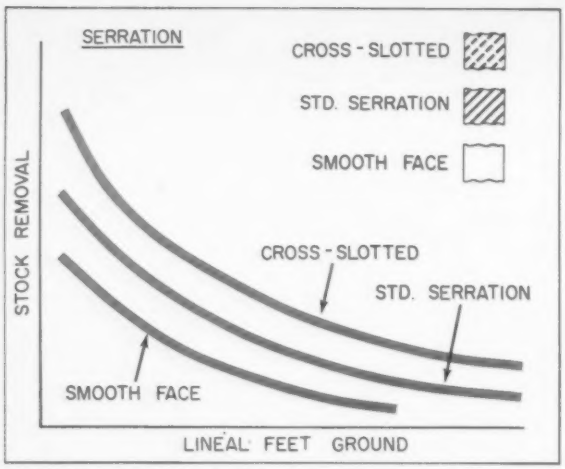
For example, thin lands and wide grooves set at a 45° angle on a

hard rubber wheel are generally used with a coarse-grit abrasive belt for aggressive stock removal on large areas. Lands and grooves of equal width running in a 15° helix on a softer wheel are used with finer-grit belts for finishing.

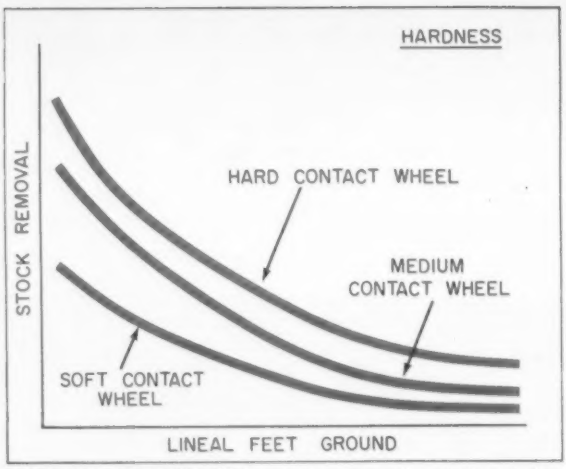
Others Plain—Flat or plain-faced wheels are used when unit pressure is high enough to get the necessary breakdown or abrasive mineral for continuous cut. Such wheels may be used to remove sharp gates from castings. They are also suitable for grinding or finishing pieces of small diameter or those made of soft metals such as brass, bronze, or aluminum.

The hardness of a rubber wheel —a very significant property— is measured in terms of "durometer." This may range from 10 (sponge rubber) to about 100 (rock hard). Except for sponge, the softest rub-

FORMED CONTACT WHEELS: Usually cloth, these wheels are used to polish symmetrically contoured surfaces.



BELT EFFICIENCY: Here's how three types of contact wheels affect the efficiency of an abrasive belt. Efficiency is measured in terms of both amount of stock removed and belt life. Serrated wheels are most efficient. The 45° serration is preferred.



WHEEL HARDNESS: Stock removal and lineal feet ground are dependent upon the relative hardness of the contact wheel. In general, harder wheels are most efficient. Softer wheels are likely to produce a better surface finish. A compromise is often necessary.

ber has a durometer of about 20. By comparison, an automobile tire is rated at about 65.

Little Wear — Contact wheels have a long life because they do not come in direct touch with the work. In time, they are bound to wear. As wear occurs, wheel design should help to retain as many original properties as possible. This kind of stability in balance, shape, and hardness directly affects wheel performance.

Coated abrasive belts and contact wheels handle a variety of jobs. This means that belt sizes and the sizes of contact wheels will vary in width from less than 1 in. to a maximum of 86 in. The extra-wide contact rolls are used for flat sheet grinding and polishing. Wheel or roll diameter may range from 1 to 20 in., depending upon application.

For Light Work—Several types of machines use contact wheels. Most popular is the backstand installation powered by a bench or floor lathe. The backstand is used when the work is light enough to be brought to the machine.

When the work is too heavy or too large to be moved easily, the abrasive belt and contact wheel are fitted to a swing grinder. This assembly is suspended from a track and provides mobility.

For grinding and finishing sharp contours, contact wheels are preshaped to fit the job. The abrasive belt follows the contour of the wheel.

Control Speed—To use abrasive belts and contact wheels effectively, speed must be controlled. Belt speed is the major criterion. It may range from 3,500 to 10,000 sfpm. Optimum speed will depend on the type of wheel, the grit of the abrasive belt, type of stock (metal, wood, plastic) and the purpose of the operation (grinding, finishing, polishing).

Speed figures importantly in determining the rate of cut. It also contributes to belt life and the attainment of a desired surface finish.

Seven Pointers — According to Minnesota Mining and Manufacturing Co., here are some facts to keep in mind when you choose a contact wheel:

1) The harder a contact wheel, the faster an abrasive belt will cut.

2) Softer contact wheels produce a better surface finish. Even soft wheels become harder as speed is increased.

3) Small diameter contact wheels increase the rate of cut.

4) Large diameter wheels improve surface finish.

5) Serrated wheels with wide grooves and narrow lands are more aggressive because of higher unit pressure.

6) Plain-faced wheels will usually produce a better surface finish than most serrated wheels. They minimize extreme shelling or mineral-loss problems.

7) On a helix-faced serrated wheel used for polishing, the lands and grooves tend to soften the wheel rather than increase the rate of cut.

Ultimately, the selection of a contact wheel usually results in a compromise. What is wanted is the wheel that offers the highest rate of cut along with desirable finish, best conformability to the working surface. Such a wheel must also contribute to the longest effective abrasive belt life.

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Optical Units Check Alignment Of Precision Grinders

By Gust Peterson—Engineer, Mattison Machine Works, Rockford, Ill.

Optical tooling uses an ideal measuring device: a weightless and perfectly straight line of sight.

Its very simplicity is an advantage in many applications.

Here a machine tool builder mounts optical units on own fixtures for production checking of alignment.

▪ Performance of a grinder depends on such factors as straightness, flatness, level, parallelism, and squareness. It's especially true for heavy-duty high-horsepower grinders built for surfacing hardened ways to a flatness within thousandths.

The problem is to find methods to measure these key factors of precision, and at the same time hold costs in line. Optical tooling provides an answer which can be applied consistently and accurately by the average man in a shop.

With a telescope and target, you establish a datum line of sight and work with direct instrument readings. It does away with less accurate squares, plumb bobs and oil pots, and stretched wires.

Select Units — By choosing a number of optical units and accessories, Mattison Machine Works is able to perform all precision checks quickly and economically. Supplied by the Engis Equipment Co., Chicago, these units include alignment telescopes, precision inclinometers, and auto-collimators.

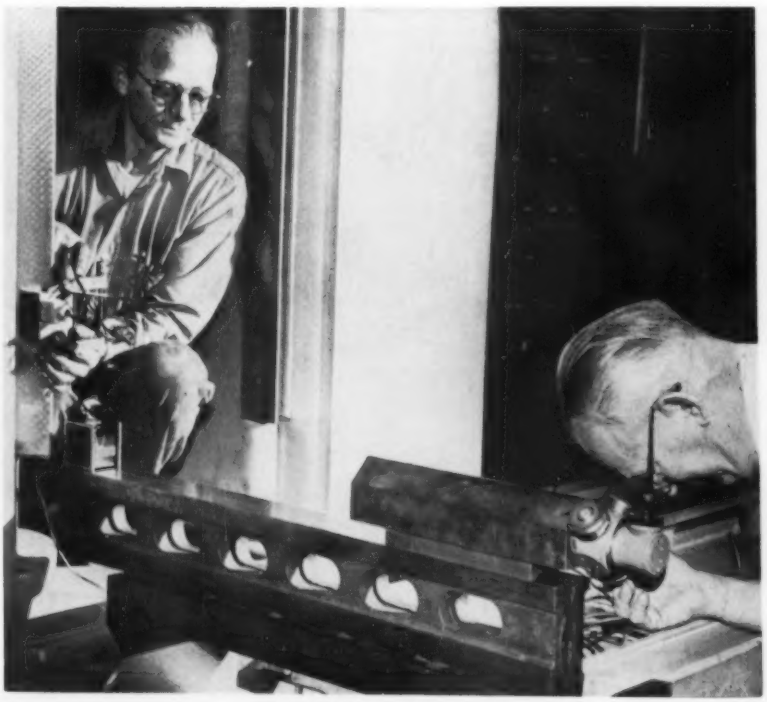
The telescope focuses to infinity and has magnification even at close distances. It's fitted with two optical micrometers, one for vertical and the other for horizontal measurement, to give simultaneous readings right-or-left and up-or-down. Both the regular eyepiece and a right-angle adapter eyepiece can be used depending on the situation.

A little practice enables the operator to measure consistently to 0.0002 in. The units are lightweight and portable and fit directly on the machine or part being measured.

Vibration Not a Factor — With the telescope set on the machine, readings will not vary because of floor vibrations, or errors from bumping external pedestals upon which the optical instrument might be mounted.

One of the most convenient features of the instruments is that they are self-checking: an accurate reading may not only be obtained by repeating and taking the mean of several readings, but the unit itself may be turned on its axis 180°. The reading is then repeated in the opposite direction to check against the original reading. The man in the shop can check the accuracy of the instrument while he is using it.

In practice, it's relatively easy to devise special holding fixtures in which to mount the telescope, its accessories, or targets. For example, two simple fixtures are designed for checking Plano-Grinder ways. They



VERTICAL: One man handles illuminated scale while his partner checks alignment of vertical way with telescope set on straight edge.

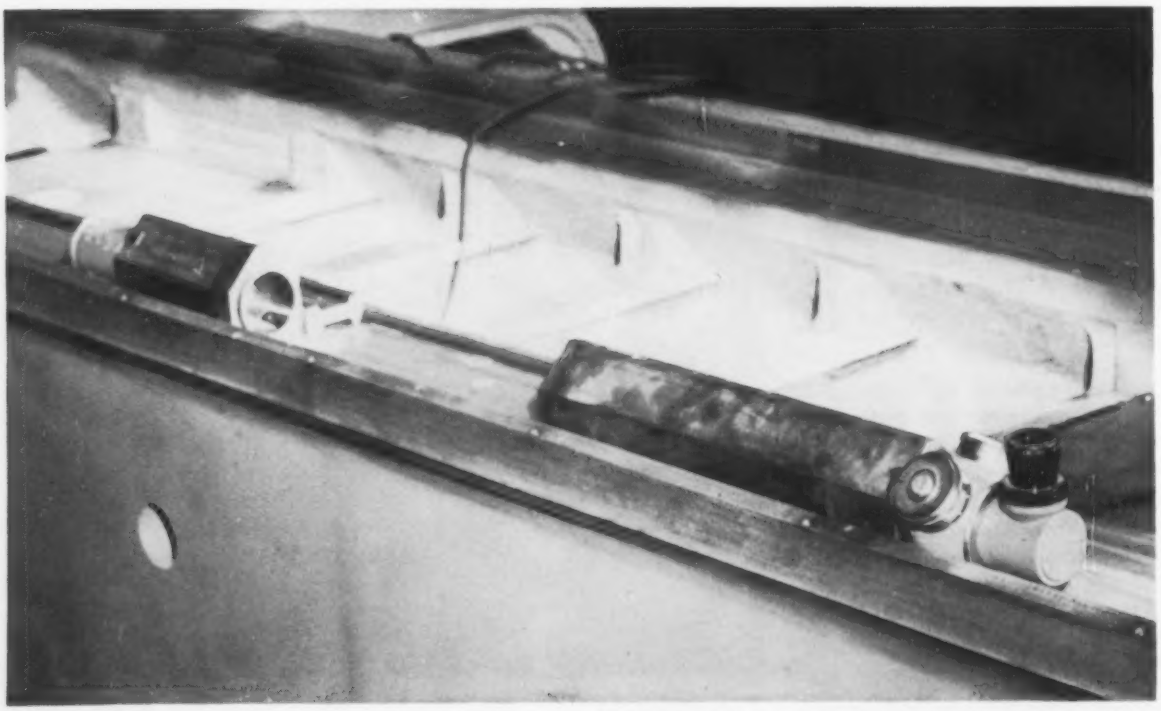
ADAPTS TO VEE: Fixtures set with Vee-side down measure straightness of a Vee-way. Eyepiece rotates to angle convenient for operator.

consist of a flat on the bottom and an angled Vee on the top so that the same fixture will check straightness or flatness of ways both on their flat top surface and on the Vees.

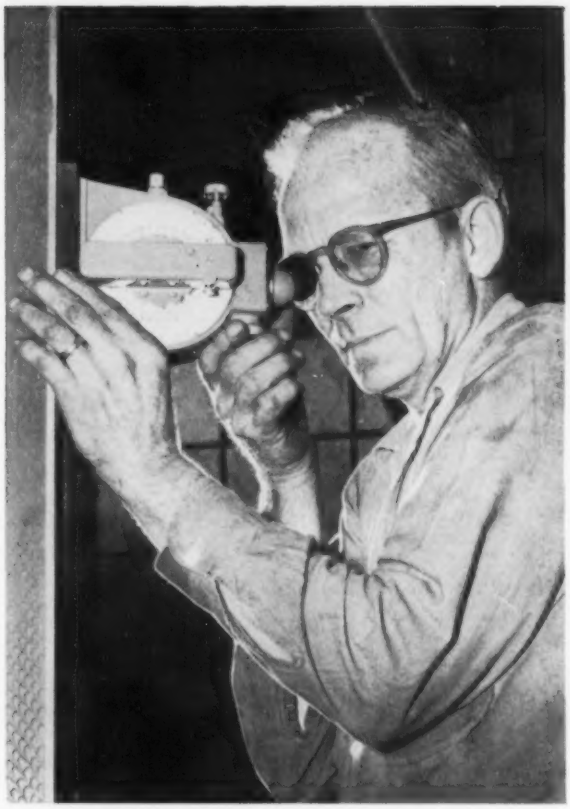
Check Grinder Ways — With these units straightness and flatness of grinder ways can be held to 0.0002 in. The placing of the telescope at one end of the way and the illuminated target at the other establishes a straight line datum from which to work. By adding targets at intermediate points or moving the end target closer to the telescope, a series of readings is taken.

If remedial scraping or spotting proves necessary a man with telescope can work directly with the skilled workman doing the scraping to check his work and direct him as he does it.

In checking verticals, an engineer's scale is used instead of the usual target. With the telescope on a straight edge, one man aims through a pentaprism or optical square and records readings, while another man moves the scale up



TWO-WAY CHECK: Combination fixtures check both straightness and flatness of grinder way within thousandths.



USE DATUM LEVEL: The precision bubble in the inclinometer enables machinist to check level and twist.

BORE TARGET: A special plug fixture adapts target for checking tolerance of 6-in. bore in 26-ft cylinders.

and down the vertical way on the column.

The printed scale reads to 0.005 in., which can be estimated visually with the telescope to 0.0005-in. It takes about ½ hour to check both columns on all of the ways in this fashion.

Use in Leveling—To check verticals, levels, and perpendicularity of columns to ways and beds, Mattison uses an inclinometer. Rather than bed-levelling a machine when it is constructed in the plant, the firm works from the datum plane of the inclinometer.

During installation of a machine in a customer's plant, the question often arises as to how the floor will take the weight of the machine. Optical measurement provides a simple answer.

The telescope is set up on a pedestal some distance away on a spot which will not be affected by the floor loading of the new machine. Readings are taken with the target on the floor next to where the machine is to sit.

Additional readings, taken after the machine is set down, point out any settling of the floor. This can then be compensated with levelling screws in the base of the machine.

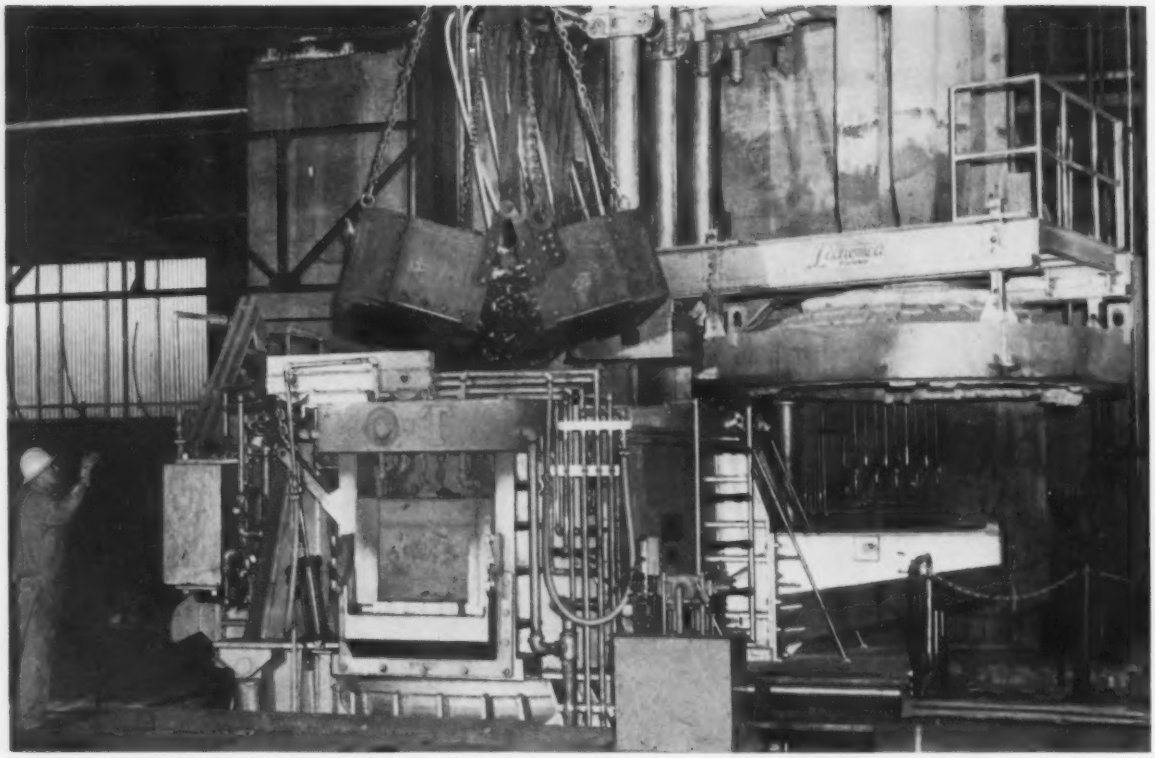
Bore Accuracy—Another problem solved was that of checking the straightness of long cylinders. These were 26-ft long with a 6-in. bore.

Mattison created a fixture by boring a steel octagon and lapping the inside to provide a wring fit for the target. Bronze pads were attached to the outside of the octagon to contact the inside surface of the tube.

The target was then mounted with an illuminator and placed in one end of the tube. With the telescope positioned at the opposite end, a true line of sight was established. The target was drawn from the far end of the tube by wire right up to the telescope with readings taken at intervals. The fact that the telescope provides simultaneous up-and-down and right-and-left readings gave the complete picture of deviation from straightness.

Together with such accessories as mirrors and targets, gage blocks, sine bars, and angle gages, optical tooling has proved to be a highly useful method of measurement. Its inherent economies of time and effort, plus the self-checking characteristics of optical units have made it profitable in the shop.

Whether heavy-duty grinders are used to machine large castings or a fixture full of small parts, optical tooling can insure additional precision and reliable performance at reduced costs for the user.



SIMPLE CHARGING: Furnace receives metal charge. Electrodes (at right) will be lowered to melt the steel.

New Furnaces Speed Delivery

By W. E. Shissler—Chief Engineer, Standard Steel Works Div., Baldwin-Lima-Hamilton Corp., Burnham, Pa.

When the demand for a product reaches a certain point, it's no longer practical for a supplier to cope with delays and inconveniences in having to purchase for a producer.

Here's how Standard Steel Works has taken steps to boost its product line by adding production equipment for high alloyed steels.

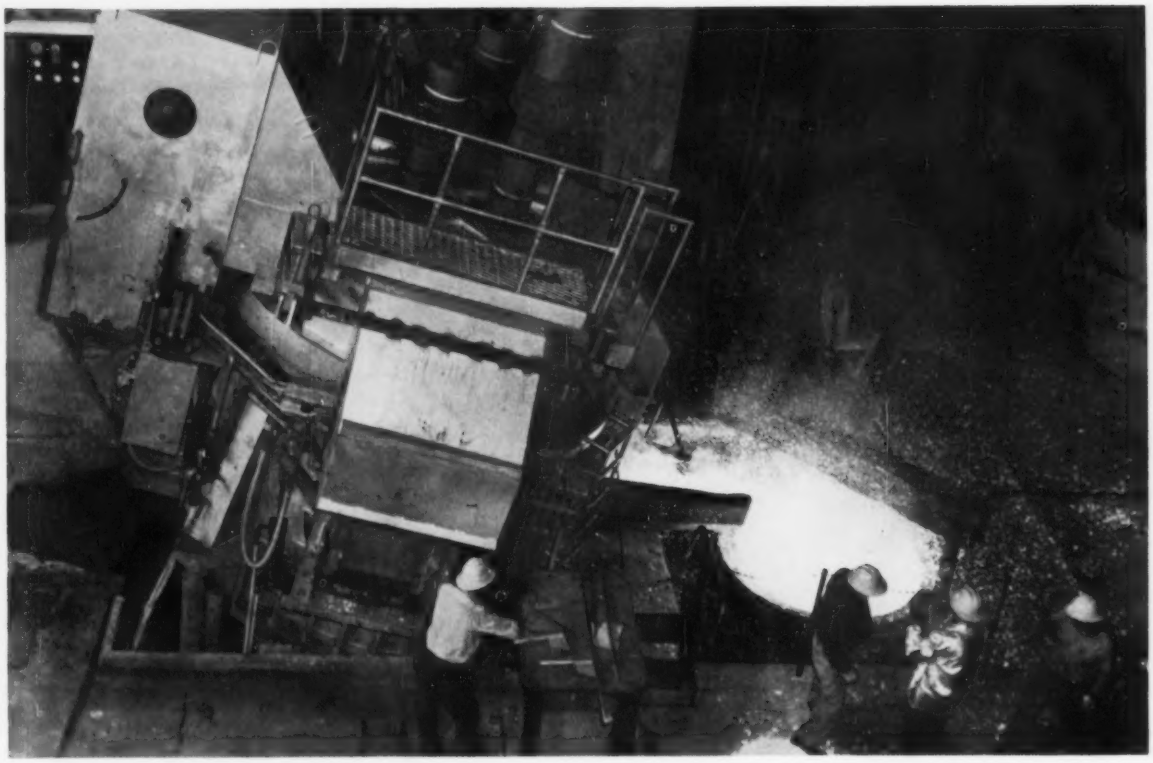
▪ An electric furnace, several ingot cooling furnaces, a battery of heat-treating furnaces, and the latest in testing facilities are all features of a continuing moderization program at the Standard Steel Works Div., Baldwin-Lima-Hamilton Corp. In addition, the installation of a system for vacuum pouring of steel should be completed before the end of 1958.

Prior to this program Standard did not have its own source of supply for many of the specialty steels made in an electric furnace. The firm had to purchase this steel with delays due to unavailability, slow delivery, lot sizes, etc. The addition of the electric furnace permits the making and processing of a greater variety of steel analyses under one roof.

Extends Product Line—The new electric furnace enables Standard to make and process such steels as these:

1. Bearing grade steels, such as SAE 52100, used in custom bearing applications.
2. Tool steels for die equipment in extrusion presses and for high-strength, high-temperature applications in supersonic flight.
3. Stainless steels for applications requiring corrosion resistance such as flanges and forgings used in chemical and petroleum processing plants and in nuclear reactors.
4. High-temperature steels for jet engines and steam substation piping applications. These high-temperature steels also have uses in the field of alloy casting.

Forecast Demand — Standard began preliminary planning for the furnace installation in 1955, when



STARTING TO POUR: Electric-furnace foreman activates hydraulic controls to begin pouring stainless heat.

# of Super Alloys

forecasts indicated increasing demands for higher alloyed steels. It resulted in an order for an electric furnace in June 1956 with the Lectromelt Furnace Co., Pittsburgh.

The size and shape of products to be made of electric-furnace steel suggested a Lectromelt Model "OT" as the best for the purpose. This unit has an 11-ft shell and a capacity of 12,000 to 30,000 lb.

To accomodate this furnace and associated facilities, considerable plant modification was required, including extension of building foundations, relocation of walls and setting of a new ingot mold storage area. The electric furnace required a 30-ton overhead ladle crane with 5-ton auxiliary hoist.

Boost Electrical Capacity—Other modifications included a revamped electrical distribution system, compatible with the existing network. Such requirements were met by installing a new set of twin transformers rated at 7500 kva each and provided with 46,000-v primaries and 6900-v secondaries.

To maintain chemical control of the steels made in the electric furnace, the firm added a new X-ray spectrometer. Part of a $30,000 laboratory improvement project, the X-ray device allows better control of higher alloy contents than could be achieved with the older direct-reading spectrometer.

Facilities for transporting samples by air tube from the open-hearth furnaces to the metallurgical laboratory have been extended to the electric furnace. With these combined facilities, complete tests of a heat can now be made and reported by closed-circuit telephone to the processing area in minutes.

More Heat-Treat Space — The heat-treating equipment has also been modernized. Two of seven new heat-treating furnaces, will accommodate the largest ring, 6000 lb. and 14 ft diam, that can presently be rolled in the ring mill.

Program controls permit controlling the temperature of steel automatically throughout the various stages and ranges of heat treating. Temperature cycles are simply preset as desired. New oil and water quenching systems can handle the largest rings.

Three new ingot-cooling furnaces have been installed. These furnaces also give constant control of temperature during the cooling of ingots to prevent internal defects.

The vacuum-pouring facilities, to be in service by the end of 1958, will allow Standard to reduce measurably the content of hydrogen and other gases in steels.

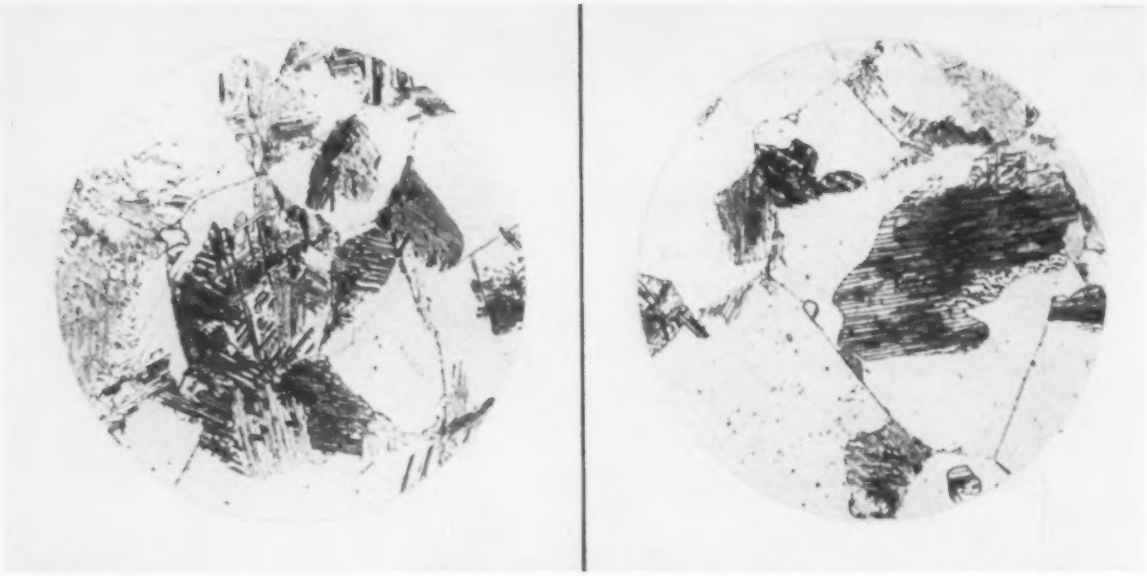


FIG. 1: Both specimens show large amounts of lamellar precipitates. The precipitate resembles in appearance the pearlite commonly found in carbon steels. Etchant is Marble's reagent, 1000X.

Solve Lamellar Phase Problem

By **Kenneth Metcalfe**—Chief Metallurgist, Universal-Cyclops Steel Corp., Bridgeville, Pa.

A grain boundary constituent known as lamellar phase can seriously lower the stress-rupture life of the high-temperature alloy A-286.

Fortunately, there are two ways of getting rid of this unwanted precipitate and improving properties of the material.

▪A-286, an austenitic stainless, is one of the better high-temperature bolting materials. But recently, threaded test specimens made of this material ran into trouble trying to meet stress-rupture specifications.

Standard smooth bar and notched bar specimens met all stress-rupture requirements with ease. Only threaded specimens failed.

There seems to be two principal factors involved in the threaded specimen failure. One has to do with the specimen itself. This part of the problem has already been covered (The IRON AGE, June 12, pp. 87-89). There is strong evidence to show that the threaded specimen does not reflect true stress-rupture strength. To this extent, it is not a valid test specimen.

Forms Precipitate — But there is another basic factor involved in failure to meet stress-rupture requirements. To some degree, its effects show up as inconsistencies in mechanical properties. This harmful factor has to do with the formation of a lamellar precipitate that is similar in appearance to the pearlite found in carbon steel.

Typical examples of this constituent are shown in Fig. 1. It apparently starts to form in the grain boundaries. Then it progresses in varying degrees into the body of the austenite grain. Material in which this phase forms generally contains less than 0.0005 pct boron.

Control Boron—With low boron content, stress-rupture properties are also low. On the other hand, material containing controlled amounts of boron (over 0.001 pct) has a consistently high stress-rupture life. Although smooth bar tests show a considerable increase in strength, the degree of improvement is even greater with notched bar specimens. In both cases, stress-rupture values actually exceed requirements.

The structure of material containing 0.0031 pct boron and having a smooth-bar life of 100 hours is shown in Fig. 2. Compare this with the lamellar constituent in solution-treated and aged A-286 containing less than 0.0005 pct boron (Fig. 3). The smooth-bar rupture life of this specimen was 12 hours.

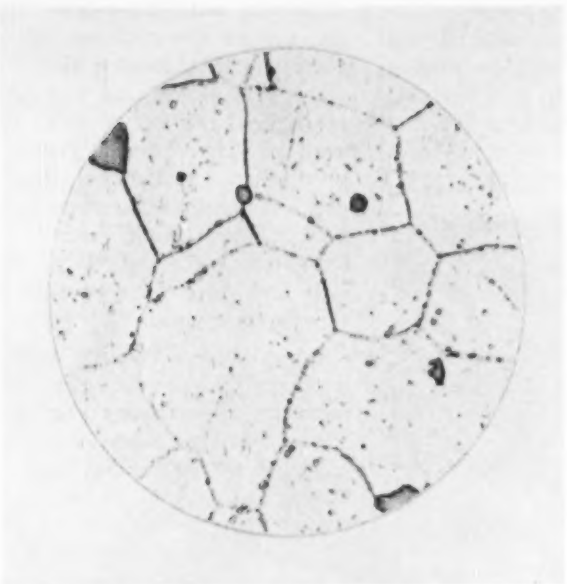


FIG. 2: With a boron content of 0.0031 pct, this material had a smooth bar life of 100 hours. Etched in Marble's reagent, 1000X.

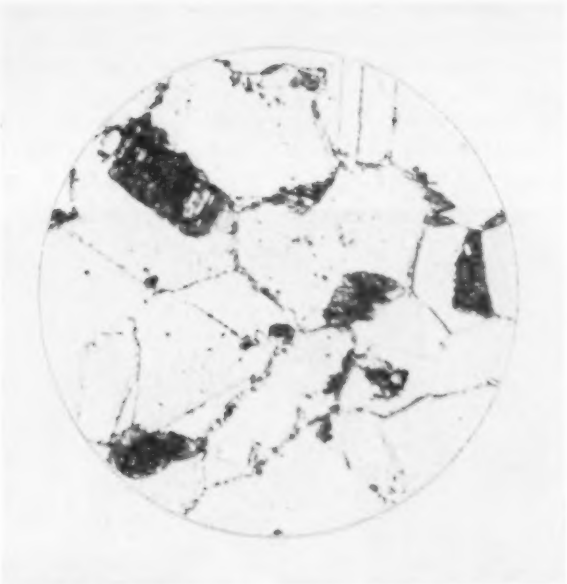


FIG. 3: Containing less than 0.0005 pct boron, lamellar constituent showed up in this heat of A-286. Etched in Marble's, 1000X.

in A-286

Cold Working—Obviously, the problem of eliminating lamellar precipitate in heat treated A-286 can be solved by controlling boron content. However, another problem arises when material is severely cold worked between solution treating and aging. This condition is found in bolts that are aged after thread rolling, as shown in Fig. 4.

This is a photomicrograph of a very low boron material after thread rolling. In this case, patches of lamellar phase were found throughout the cross section of the bolt. The threads were almost completely lamellar. As a result, the rupture life of the bolt was extremely short.

Some Improvement — When a material with higher boron content was thread rolled, the lamellar precipitate no longer appeared in the cross section. Some of this phase did show up in the severely cold worked threads, however (Fig. 5).

The rupture life of this specimen was much improved and met the specified requirements. Still, its rupture life did not approach that of the raw material from which the bolt was made.

Micro hardness tests showed that the material was somewhat softer in the precipitate areas than in areas where no precipitate occurred. Similar material with proper boron content (but not cold worked) was found to develop a comparable structure and hardness when it was over-aged at 1450°F.

Solution Treating—Lowering the aging temperature to 1200°F on cold worked samples produced proper hardness with almost complete freedom from lamellar constituent. However, this caused notch sensitivity. Cold working was apparently causing over-aging when the normal aging treatment was used. Also, hardness values and rupture life were lowered.

Re-solution treatment at temperatures ranging from 1600° to 1900°F dissolved the lamellar constituent. However, the phase reappeared immediately upon aging at 1325°F. When solution treated in the range of 2000°F to 2200°F, subsequent aging did not cause reprecipitation of the lamellar constituent. However, if the same solution treated material was re-solution treated at 1800°F and aged at 1325°F, lamellar precipitate reformed.

Eliminates Phase—The 2000°F solution treatment will not prevent the formation of lamellar precipitate if the sample is subsequently cold worked before aging. But after the precipitate is formed, it may be redissolved at 2000°F. It will not reprecipitate on aging in the absence of further cold working.

The microstructure of a bolt that was re-solution treated at 2000°F and re-aged at 1325°F for 16 hours is shown in Fig. 6. This treatment almost entirely eliminated the precipitate. Rupture life of the material was over 50 hours.

Blame Oxygen—A number of theories have been advanced to explain the formation of lamellar precipitate. One places the blame on the presence of oxygen in the metal.

But consumable electrode melting —which normally reduces the oxygen content—does not produce precipitate-free material when the boron content is low. This theory also fails to explain why material treated without cold work is free of precipitate while the same material cold worked between solution treating and aging may show appreciable amounts of precipitate.

Some substantiation of the oxygen theory has been indicated by the use of non-oxidizing atmospheres. Material solution treated in argon, cold worked, and then aged in argon shows less tendency toward lamellar constituent than the same material treated in air atmosphere. To obtain this improvement, both solution treating and aging must be done in argon. Similar results have been obtained with a nitrogen atmosphere.

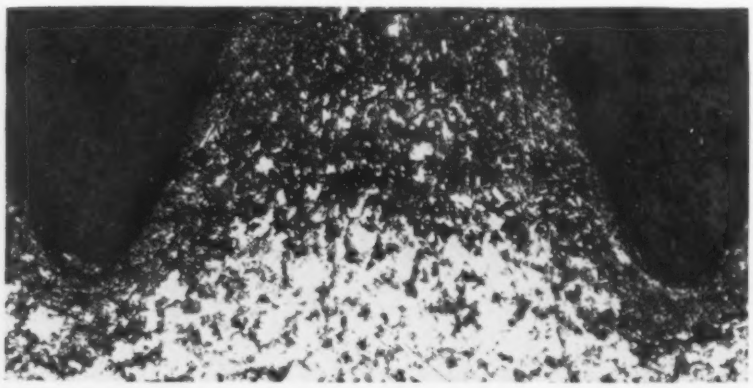


FIG. 4: When a low-boron material is thread rolled, patches of lamellar phase occur throughout cross-section. Etched in Marble's, 100X.

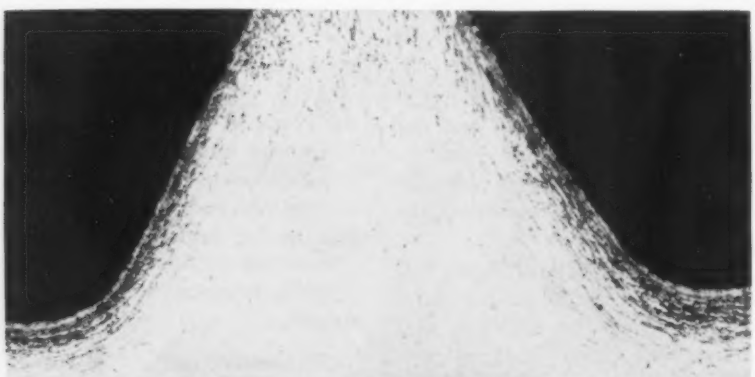


FIG. 5: Less lamellar phase is found in material with higher boron after thread rolling. Rupture life is better. Etched in Marble's, 100X.

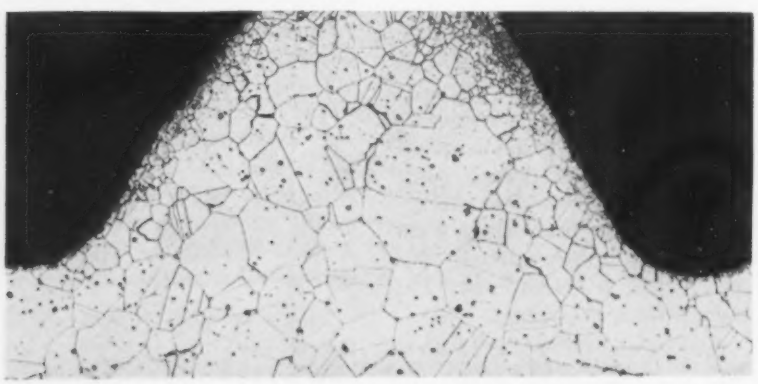


FIG. 6: Re-solution treated at 2000°F and aged at 1325°F for 16 hours completely eliminated lamellar phase. Etched in Marble's, 100X.

Other Factors—The type of cold work applied may also affect the formation of precipitate. For example, specimens which have been broken in tension between solution treating and aging do not show precipitate when the material contains the proper amount of boron.

Similar material cold worked by cold drawing between solution treating and aging does not show precipitate. But the use of cold straightening or hammer peening produces appreciable precipitation. Thread rolling results in precipitate and the degree of precipitation is greatly reduced by the use of boron.

Two Approaches—The combination of cold working and aging apparently causes an over-aging effect when normal solution treating temperatures (1650° and 1800°F) are used. This effect can be almost completely eliminated by solution treating at 2000°F or higher. Thus it must be assumed that the occurrence of the precipitate depends on the stability of the solid solution.

There are two approaches to the problem of eliminating lamellar precipitate. In parts that are not processed by cold working, it is simply a matter of keeping boron content above 0.001 pct. Where severe cold working between solution treating and aging is necessary, lamellar phase can be eliminated and good stress rupture properties obtained by re-solution treating at 2000°F.

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Using one of its own products, a press feed lift table, Colson Corp., Elyria, Ohio, reports that it slashes production costs by several thousand dollars. Operation of the new setup is simple. Materials handlers merely place a full load of sheet on the table. The operator adjusts its height so that the table deck is always slightly above the shear table. He then can slide individual sheets of up to 3/16 x 30 x 120 in. into position for shearing. A simple guide rail keeps sheets properly aligned.

Reduces Scars, Too — The company also reports that danger of putting ruinous buckle marks in large light-gage sheets is reduced in the one-man liftable operation.

The table has a 10,000-lb capacity. It employs four independent hydraulic rams with cross-connected stabilizers. These assure a level deck despite possible uneven loading. The table positions via foot-operated "deadman" up and down pushbuttons. The 36 x 78 in. deck can be raised from 18 to 36 in.

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Brazing

Motorized setup simplifies flanged-part fluxing

Production engineers at Fenwal Inc., manufacturers of thermostatic controls and fire detectors, have devised an improved method for speeding up fluxing of parts having awkward contours. A typical part is a stainless steel aircraft fire detector which has a triangular flange mounted on a cylindrical shell.

The flux serves as a protective coating to prevent oxidizing of the stainless steel during subsequent torch brazing with a silver alloy produced by Handy & Harman, New York. Experience showed usual

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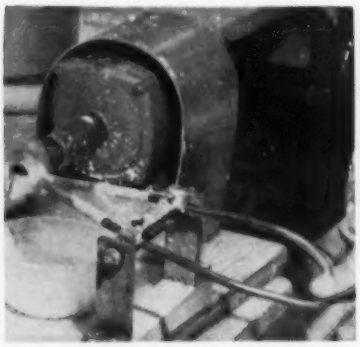
hand-brush methods as too slow and tedious. Awkward hand positions were required to flux the upper and lower surfaces of the flange plus the areas of shell adjacent to the flange.

Cures Its Ills—A motorized fixture solved the problem. This fixture holds the part in a horizontal plane and rotates it between a pair of flux brushes. The end of the shell inserts into a collet mounted on the shaft of a fractional horsepower motor. The motor rotates at a speed low enough (about 45 rpm) to prevent flux from spraying off by centrifugal action. The collet ID is about ⅛-in. oversize to permit the shell to be slipped in and out freely. It's long enough to support the shell for about ⅔ of its length to prevent excessive sag or play during rotation.



This rotating fixture speeds up fluxing of awkward contours.

Brushes Swing Away—Fluxing brushes are held in ends of a ¼-in. tube bent around to straddle the flange. The brush holder, which pivots freely on an axle, is slightly overweighed at the front end. Thus, brushes dip into the trough of flux when the operator releases the handle.

Metals

A new high temperature alloy, NA3, has been formally announced by Blaw-Knox Co., Pittsburgh. It's said to have greater creep strength than 35-15. Castings made from the new alloy will sell for less than the same casting made from 35-15. NA3 is recommended for use at temperatures below 2000°F.

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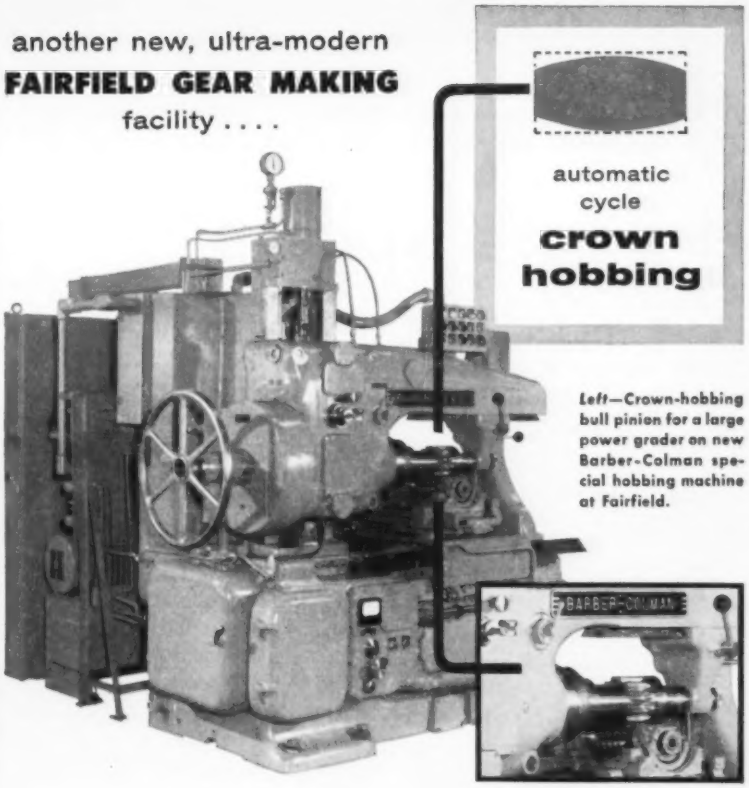

Left—Crown-hobbing bull pinion for a large power grader on new Barber-Colman special hobbing machine at Fairfield.

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Aluminum Insulation Protects Boilers

By leaving boilers outdoors, utilities can cut drastically building costs. But attack by weather then becomes a worry.

Aluminum, clad over regular insulating material, protects outer surfaces.

▪ Use of metal as insulation is growing. Aluminum sheet, electric utility men find, can help them reduce construction costs considerably with no reduction in efficiency.

At Beverly, Ohio, Ohio Power Co.'s steam generating plant has two new 225,000-kw boiler units making use of aluminum lagging.

Fabricators found the lagging easy to lay out, cut and form.

Of "outdoor type" construction, the units are first insulated with conventional materials, then covered with stucco embossed flat and box ribbed aluminum sheet. The 140,000 lb of aluminum materials are products of Kaiser Aluminum & Chemical Sales, Inc., Chicago.

Covers Ducts, Too—Flat aluminum sheet jackets air ducts, fan housings, convection pass hoppers, headers and downcomers. The two Babcock & Wilcox boilers and all insulated breeching are covered with the ribbed siding. It provides neat appearance as well as functional service.

Aluminum lagging, because of excellent reflecting characteristics, supplements conventional boiler insulation materials by reducing radiant heat losses. Thus, aluminum acts as an insulating agent as well as a protection against weather.

Heat Treating

Two new chemical compounds aid processors of titanium and steel alloys. One compound inhibits forming of tenacious scale on stainless steel, nickel-chrome, and alloys of cobalt, titanium and copper during heat treatment. North American Aviation, Inc., says it eliminates need of controlled atmosphere furnaces for high temperature heat treatment of these metals.

The other compound prevents gaseous contamination of pure and alloy titanium, permitting the metal's heat treatment in an air atmosphere. It does away with embrittlement of titanium during elevated temperature heat treatment, and reduces warpage during quenching 60 pct.

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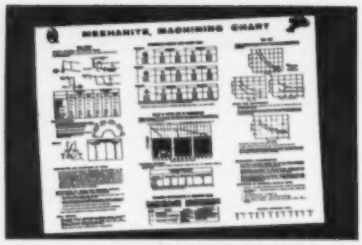

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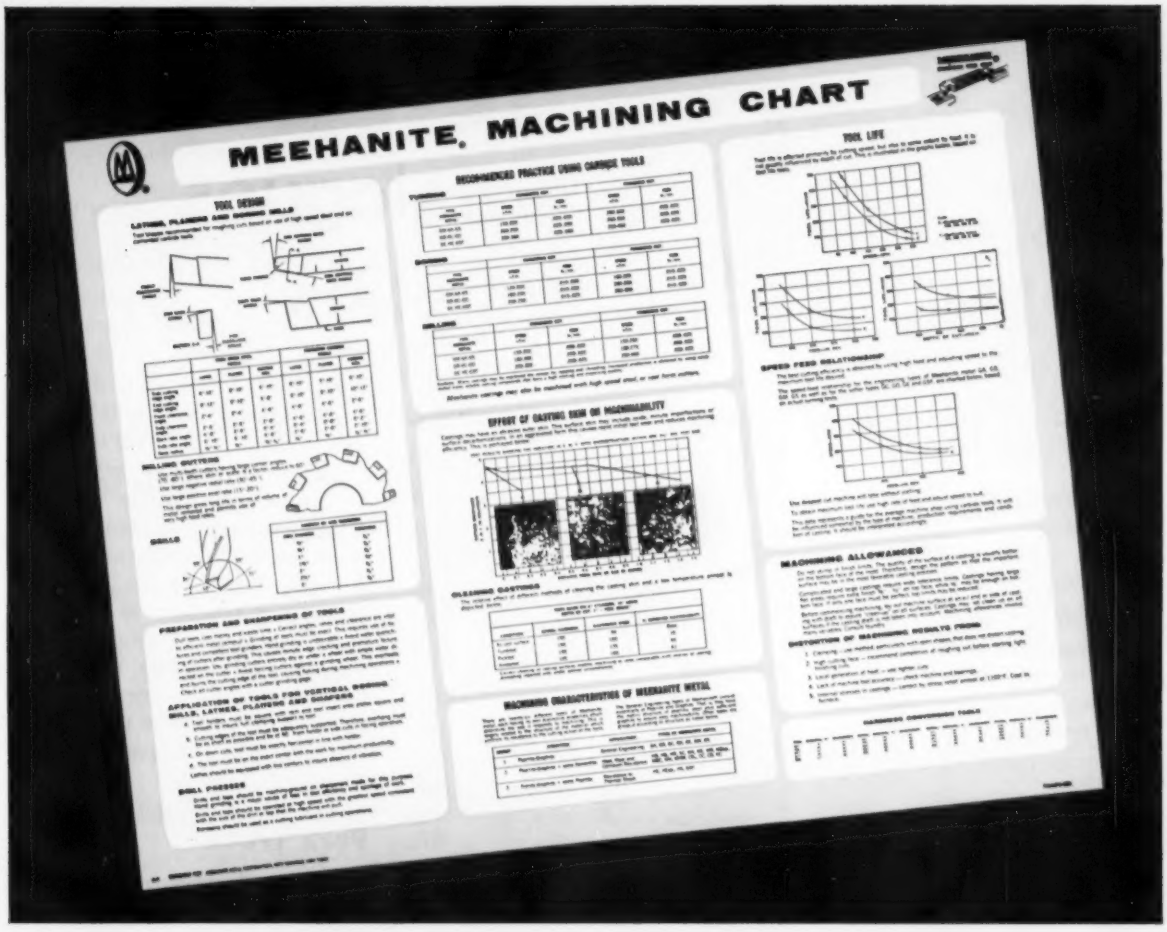

New Meehanite Wall Chart presents useful data on machining castings

Designed as a working chart for use in every machine shop, this new, two color, 18 x 24 wall chart contains considerable machining data that has been heretofore unobtainable. This lack of data has created many problems and has placed foundries and machine shops at a distinct disadvantage, particularly in view of the fact that the cost of machining is often considerably more than the cost of the casting.

The extensive information presented in this machining chart is the result of years of research and development by the Meehanite Metal Corporation and Meehanite foundries throughout the world.

The various aspects of machining covered, include tool design for lathes, planers, boring mills, milling cutters and drills; preparation and sharpening of tools; applications of tools for vertical boring mills, lathes, planers and shapers, and drill presses; recommended practices using carbide tools; effect of casting skin on machinability; tool life, speed-feed relationship, machining allowances, etc.

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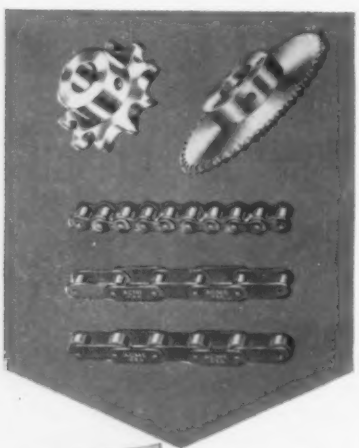

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New Catalogues And Bulletins

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Melting Furnaces

Literature just released introduces new gas and oil fired, mechanical and hydraulic tilt, crucible melting furnaces for brass, bronze, aluminum, and other nonferrous metals. (Stroman Furnace & Engineering Co.)

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Cutting Oil

A new cutting oil under an old name is announced in a bulletin. (Sun Oil Co.)

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Microfilming

Literature explains a new light scattering concept used in microfilming. (Miehle-Goss-Dexter, Inc.)

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Transformers

A 4-page bulletin outlines design and construction characteristics of heavy duty variable voltage transformers in the 5 to 41.5 kva range. (M & T Welding Products Corp.)

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Designed for fast, accurate, economical turning, facing and boring of irregular contours, a new tracer control system is explained in a 20-page bulletin. Applicable to a wide range of production lathes, the Monarch - Keller system lets machines perform complicated contouring operations automatically in a single, continuous cut. It uses a thin metal template as a guide. Metal-removing capabilities of the machine are not limited in any way by the tracer. (For free copy write on company letterhead to Monarch Machine Tool Company, Sidney, Ohio.)

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Electric powered, a 4000-lb capacity fork truck described in a 4-page folder comes in two models. One is 68-in. high; the other, 83-in. high. (The Elwell-Parker Electric Co.)

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Diamond-coated Steel

Industrial applications of diamond-coated steel tools are discussed in a catalog. Applicable to saws, wheels, drills, burrs, edgers, shapers, countersinks and other tools, the diamond-coating lets tools work at high speeds without coolants. Increased production and cut costs result. (Dia-Chrome Co.)

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Conveyors

Conveyors are featured in a catalog. It's designed to aid management and operating personnel in selecting hinged steel belt conveyors for handling scrap, chips, turnings, stampings, forgings, heavy parts, assemblies and similar materials in

heavy industry and warehousing operations. (For free copy write on company letterhead to May-Fran Engineering, Inc., 1698 Clarkstone Rd., Cleveland 12, Ohio).

Arc Welder

A brand new idea in arc welding appears in a 6-page folder. It describes a welder that combines precision of automatic welding with flexibility of manual methods. (Lincoln Electric Co.)

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Clinch Nuts

Standard and miniature clinch nuts described in an 18-page handbook are self-retaining and self-locking. The shank-type fasteners are suitable for attaching cover plates or mounting metal panels. (Elastic Stop Nut Corp. of America).

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Roller Conveyors

A 14-page brochure announces new 1.9-in. removable roller conveyors. Spring loaded at one end, the rollers come in 12-gage steel for heavy duty, 16-gage steel for medium duty, and 0.065-in. aluminum for lighter jobs. (Rapids-Standard Co.)

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Magnesia Insulation

Swaged magnesia insulation covered in a 4-page brochure can insulate thermocouple wires, electrical conductors, etc. It's recommended for use where high temperature, vibration, abrasion, extreme cold, moisture, and nuclear radiation are present. (Aero Research Instrument Co., Inc.)

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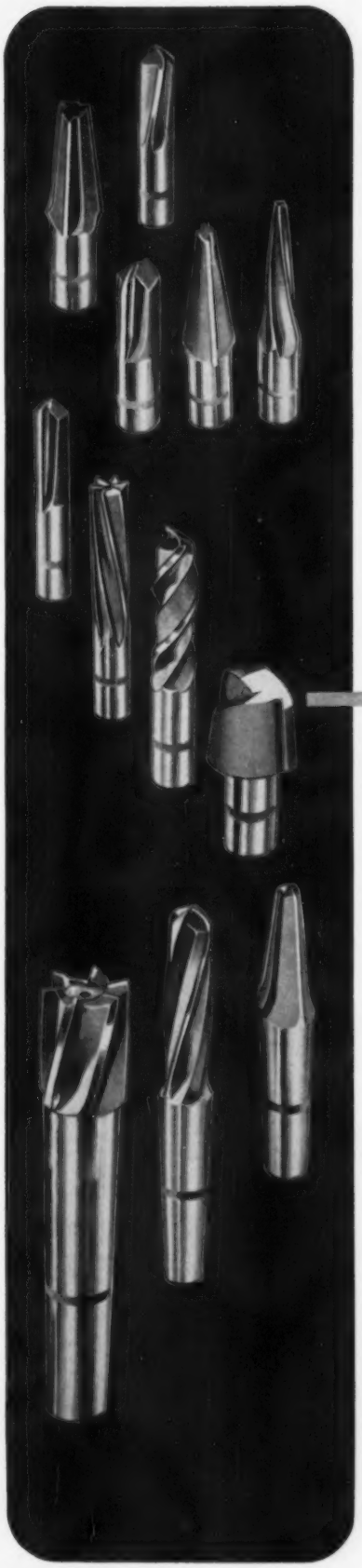
Valves

Nine different automatic water control valves and their uses are described in an 8-page bulletin. Included are: cushioned check valves, water level control valves, sensitive pressure regulators and one-man



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HIGH SPEED STEELS – Crucible's famous "Rex" steels: Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEELS – Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

MACHINERY STEELS – Crucible Max-El rounds, hexagons, plates and brake die steel

ALLOY STEELS – Bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS – Wing or section twisted augur drill steels, hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS
HOLLOW TOOL STEEL
WELDING AND HARD FACING ROD
PLASTIC MOLD STEELS
PERMANENT MAGNETS

— and many others

Need stainless sheet? The local warehouse stocks most types, finishes and sizes for prompt delivery to you.

CRUCIBLE STEEL COMPANY OF AMERICA

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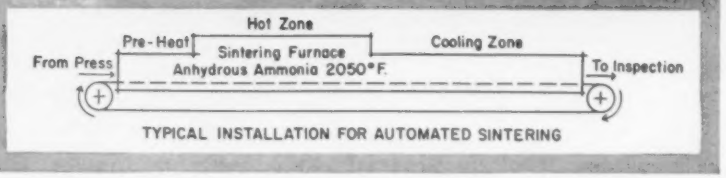
Cambridge WOVEN WIRE BELTS



TYPICAL INSTALLATION FOR AUTOMATED SINTERING

METAL-MESH BELTS CUT OPERATING COSTS IN CONTINUOUS HEAT TREATING

Moving through a fiery 2050° F. temperature to fuse metal powders, Cambridge Woven Wire Belts easily resist heat and flame to give long service life, less maintenance, continuous, uniform production. Belt-to-belt flow of products through various heat treating operations eliminates costly manual handling, batch processing for faster, more economical production.

In annealing, quenching and washing operations, Cambridge belts help increase product uniformity and maintain capacity production. Here's why:

OPEN MESH ALLOWS FREE CIRCULATION OF HOT GASES, LIQUIDS through belt and around product for faster, more uniform processing; quench and wash solutions drain freely, thoroughly.

ALL-METAL CONSTRUCTION IS HEATPROOF, ACIDPROOF—takes up to 2100° F. temperatures; resists corrosive attack; has no seams, lacers or fasteners to break.

SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights to hold product on belt during movement.

Talk to your Cambridge FIELD ENGINEER soon—he'll explain the many advantages of continuous heat treating on Cambridge belts. And, he'll recommend the belt size, mesh or weave—in the metal or alloy—best suited to your operations. You'll find his name in the classified phone book under the heading "BELTING, MECHANICAL". Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

Department A,
Cambridge 7,
Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

FREE LITERATURE

control valves. Sizes range from 2 to 36 in. Valves are manufactured for pressures up to 250 psi. (Golden-Anderson Valve Specialty Co.)

For free copy circle No. 11 on postcard, p. 85

Protective Clothing

Heat reflective safety clothing in a new line is made of an asbestos fabric. Free literature and a sample swatch provide more information on the clothing. (American Optical Co.)

For free copy circle No. 12 on postcard, p. 85

Research, Development

Newly-published a brochure describes a firm's research and advanced development division. It contains a summary of the division's projects, facilities, services and capabilities. (Avco Mfg. Corp.)

For free copy circle No. 13 on postcard, p. 85

Fire Extinguishers

Carbon dioxide fire extinguishing systems are presented in an 8-page brochure. So are fire detection equipment, ultrasonic and photoelectric burglar detection systems. It contains a chart outlining suitability of portable fire extinguishers. (Walter Kidde & Company, Inc.)

For free copy circle No. 14 on postcard, p. 85

Industrial Painting

Industrial painting maintenance is discussed in a book. It gives facts on how a planned painting program can save more than 30 pct in maintenance costs on labor and material. (Kenneth Tator Associates).

For free copy circle No. 15 on postcard, p. 85

Quick-connect Switch

A data sheet announces a quick-connect switch, ultra-small in size but high in electrical capacity. (Micro Switch Div., Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 16 on postcard, p. 85

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Machine Vises

Drill-press and machine vises are shown in a catalog. Reviewed are recent advances in air-hydraulic vises. They provide instant clamping, can be moved from machine to machine. (Wilton Tool Mfg. Co.)

For free copy circle No. 21 on postcard

Blending System

Exact blending of dry pulverized materials is possible with a new system. A 16-page bulletin describes the blending system. (Fuller Co.)

For free copy circle No. 22 on postcard

Motor Cleaning

The cleaning of electric motors is discussed in a bulletin. The "how-to" publication contains some useful hints on uses of solvents. (Fine Organics, Inc.)

For free copy circle No. 23 on postcard

Lift Trucks

Mechanical and hydraulic lift truck attachments are presented in a catalog. It includes 26 ways for owners to get more use from lift trucks. Many attachments are designed for use with forks, others for carriage mounting. (Little Giant Products, Inc.)

For free copy circle No. 24 on postcard

Refractories

Correct methods of installing refractory brick in the hot zones of rotary kilns are presented in a 32-page manual. Tables help the reader quickly, accurately compute number of bricks necessary to line most standard diameter kilns. Maintenance, ordering, shipping, materials, etc. are also covered. (Kaiser Aluminum & Chemical Sales, Inc.)

For free copy circle No. 25 on postcard

Guided Missiles

All military missiles known to be under construction by the U. S. as of Feb. 10, 1958 are listed in an 8-page guide. It gives names and addresses of prime contractors missile-by-missile. Data came from government sources. (La Salle Steel Co.)

For free copy circle No. 26 on postcard

Buffs

Stressing importance of proper buff selection, a 12-page bulletin covers an entire line of cutting and coloring buffs. It discusses how users can tailor the buff to the job. (Hanson-Van Winkle-Munning Co.)

For free copy circle No. 27 on postcard

Flat Stock

Free machining, low carbon precision ground flat stock is covered in a bulletin. It lists many sizes available and gives suggestions for use, specifications and heat treatment introductions. (L. S. Starrett Co.)

For free copy circle No. 28 on postcard

Extrusion Steels

Tool steels for the hot extrusion process are discussed in a 16-page booklet. (Crucible Steel Co. of America).

For free copy circle No. 29 on postcard

Separators

Separators and thickeners which remove suspended organic matter and chemical flocs from process water are covered in a bulletin. (Chain Belt Co.)

For free copy circle No. 30 on postcard

Controller

Signalling controllers for electrolytic conductivity are outlined in a data sheet. Controllers can: (1) detect condensate purity; (2) measure

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. **7/3/58**

Circle numbers for Free Technical Literature or Information on New Equipment:

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No postage necessary if mailed in the United States

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FREE LITERATURE

ratio in detection of capacity-loss of ion exchangers; (3) help control acid for mercerizing and carbonizing baths. (Leeds & Northrup Co.)

For free copy circle No. 31 on postcard

Stamped Gears

Illustrating typical examples of precision stamped gears is a 20-page booklet. It includes gear design data, materials, finishes, size limits, and time-saving tips. (Fastex Div., Illinois Tool Works).

For free copy circle No. 32 on postcard

Heaters, Ventilators

Heating and ventilating units are featured in a 48-page specifications catalog. Complete tables provide for steam heating, hot water heating, and fan capacities. (American Blower).

For free copy circle No. 33 on postcard

Spring Fasteners

An 8-page booklet reviews a line of spring-gripping and other shaft retention fasteners. (Illinois Tool Works).

For free copy circle No. 34 on postcard

Rubber Hose

Eight new catalog sections deal with rubber hose. They cover: air, water, steam, water suction, petroleum, industrial fire, spray and welding hoses. (Manhattan Rubber Div., Raybestos-Manhattan, Inc.)

For free copy circle No. 35 on postcard

Graphite Brushes

Carbon and graphite brushes for rotating electrical units are described in a 12-page bulletin. (Speer Carbon Co.)

For free copy circle No. 36 on postcard

Nuclear Tube

Tubing for atomic power is discussed in a data memorandum. In 6 pages, it reviews tubing for heat exchangers and nuclear fuel elements. AISI types 304, 347, 348; Inconel, zirconium, Zircaloy 2 and Zircaloy 3 are listed. (Superior Tube Co.)

For free copy circle No. 37 on postcard

Gas Regulators

Industrial gas regulators, 47 of them, are described in a 20-page catalog. Inlet and outlet connections are listed according to American standards of the Compresses Gas Assn. (Linde Co.)

For free copy circle No. 38 on postcard

Presses

Deep throat, high speed presses are illustrated in a 4-page bulletin. Presses range from 4 to 60-ton capacities, 90 to 195 strokes per minute speeds. (E. W. Bliss Co.)

For free copy circle No. 39 on postcard

Diecasting Steels

Tool steels for diecasting process applications are outlined in a 16-page bulletin. It analyzes requirements for all diecasting tools. (Crucible Steel Co. of America).

For free copy circle No. 40 on postcard

Dust Control

Dust density measurements electrically transmit to remote indicators and/or recorders via a new transmitter. A 4-page bulletin gives details. (Bailey Meter Co.)

For free copy circle No. 41 on postcard

Handler

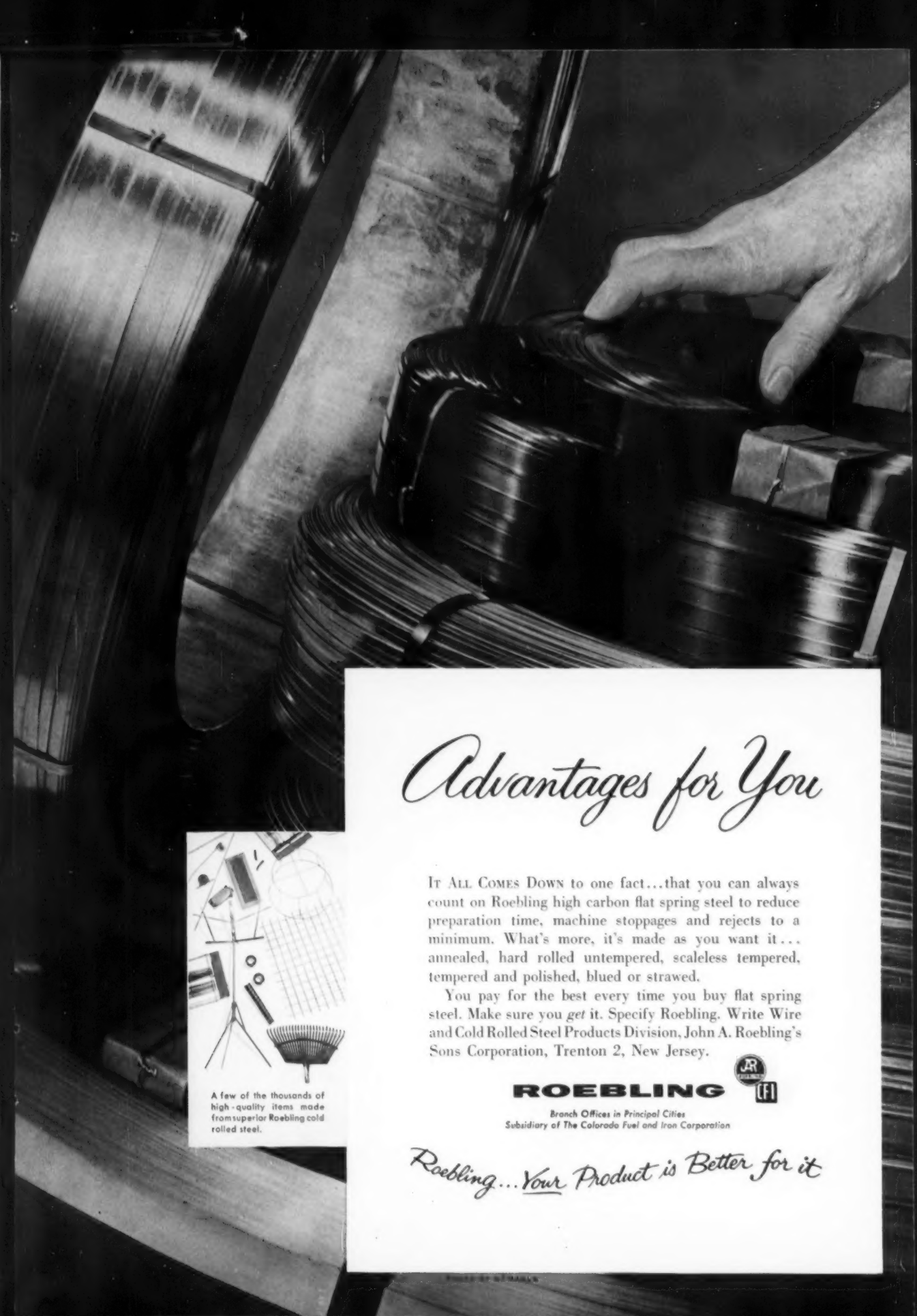
Bottom-dump construction type materials handlers are introduced in a catalog. The 6-page folder gives details of a motor wagon with a 28 cu yd capacity. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 42 on postcard

Zirconium

Technical and application data on zirconium and hafnium appears in a 16-page brochure. Common mill shapes now available and future prospects for these metals are dealt with. (Mallory-Sharon Metals

For free copy circle No. 43 on postcard



Advantages for You

IT ALL COMES DOWN to one fact...that you can always count on Roebling high carbon flat spring steel to reduce preparation time, machine stoppages and rejects to a minimum. What's more, it's made as you want it... annealed, hard rolled untempered, scaleless tempered, tempered and polished, blued or strawed.

You pay for the best every time you buy flat spring steel. Make sure you *get* it. Specify Roebling. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

A few of the thousands of high-quality items made from superior Roebling cold rolled steel.

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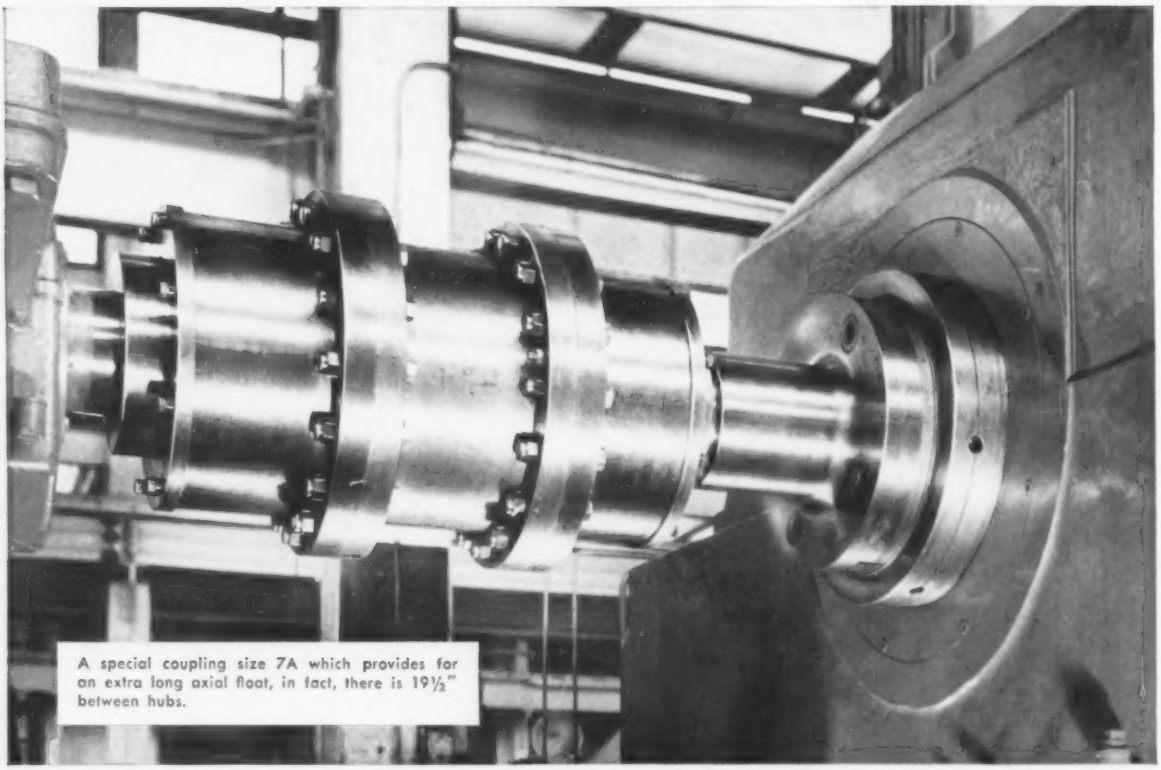
SPECIAL COUPLING PROBLEMS



A special coupling size 7A which provides for an extra long axial float, in fact, there is 19½" between hubs.

SOLVED

at JOHN WALDRON

From time to time, manufacturers are faced with special power transmission problems which cannot be handled by standard couplings. Sometimes they need a coupling for exceedingly high speed drives, sometimes a coupling for very large diameter shafts and for other special applications.

John Waldron, which is well known for its ability to produce high quality couplings also makes excellent special couplings to customer requirements. In the past, Waldron has made couplings that turn at speeds over 50,000 RPM, couplings which can take over 45,000 HP and couplings for particular applications such as continuous lubricated couplings, spacer types, shear pins, cut-outs and couplings for many other special installations.

If you have a particular power transmission problem that needs a special coupling, call or write the John Waldron Corporation in New Brunswick, New Jersey. Their long experience in designing, and manufacturing couplings for special problems, may have already solved your problem for you.

JOHN **WALDRON** CORP.

A unit of J. O. Ross Engineering Division
Midland-Ross Corporation
New Brunswick, New Jersey

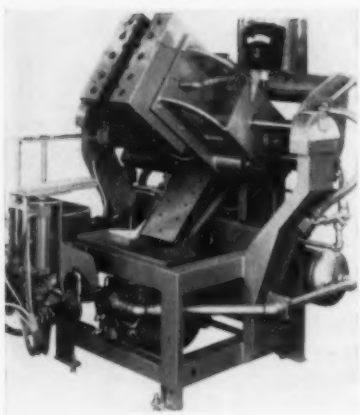
New Production Ideas

Equipment, Methods and Services

Tape-run Drill Handles Toolroom Work

Though primarily a tool-room machine, a new tape-controlled drilling unit with an electronic brain also performs short run production jobs. And it does these without incurring the cost of expensive jigs and patterns. Much tape control work in machine tools has been aimed at such specialized machining jobs aircraft skins, spars, and other defense work uses. The maker of this unit, however, aims at putting tape control into general manufacturing applications, and in a spot where it can produce savings —reduction of jig and pattern costs. A recently unveiled pilot model is a basic drilling unit, with manual settings for depth, drill speed, and table feed rate. Its tape control allows the operator to reset the pattern manually, if necessary, while the drill is operating under tape control. (Cleerman Machine Corp.)

For more data circle No. 45 on postcard, p. 85



Unit Produces Cores, Shell Molds Quickly

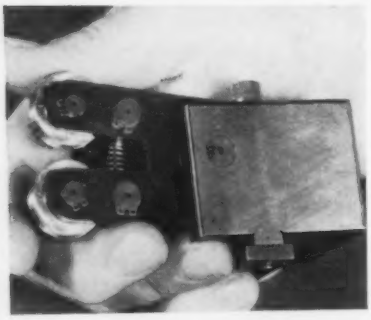
Working fully-automatic or manually- operated, this single-station machine quickly, economically produces a wide variety of hollow cores and shell molds. It's recommended where mixed types and sizes are blown simultaneously. Use of a battery of such machines can permit exact selection of cycle times and temperatures required for production of sound cores or molds of varying sizes and types. The unit accommodates core boxes from 3 to 9-in. thick, 1 to 16-in. deep and 5 to 21-in. high. Several individual core boxes, of identical thickness, also can be mounted on the gas-fired heating platens at the same time. Up to 30 lb of solid core can be blown. The core box is blown at a 45° angle; then it rotates through an 80° arc to drain uncured sand. Horizontal core arms are above the 32° natural repose angle of the sand. (SPO, Inc.)

For more data circle No. 46 on postcard, p. 85

Device Electronically Calls Plant Men

By vibrating, a new electronic calling device lets the holder know someone wants to communicate with him. He then goes to a nearby phone or other communication system to make contact. It works like this: You slip a small radio receiver, about the size of a cigarette pack, into your pocket. Then you go about your work. Perhaps you're walking through a part of the plant where machines are running. A public address system might not be able to reach you. But someone wants you on the phone. So a call over the electronic system is made. The device vibrates; you go to the nearest phone; the operator puts through the call or relays a message. What's more, the setup discriminates between vibrating receivers. Only you get your signal. FCC okay isn't needed. (AC Spark Plug Div., General Motors Corp.)

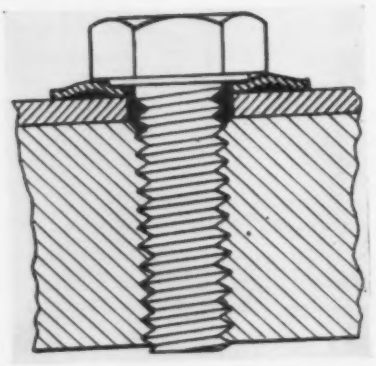
For more data circle No. 47 on postcard, p. 85



Attachment Rollover-threads Small Pieces

For rolling threads up to ¼-in. OD, a new thread-rolling attachment can be used on "00" Brown & Sharpe and 9/16-in. Acme-Gridley setups, without machine modification. It rolls threads from No. 0-80 to No. ¼-20 with maximum thread width of ½ in. The attachment makes possible rollover threading of small parts instead of single-side "bump" rolling. The latter could distort the workpiece because of excessive side pressure. Synchronous rotation of rolls in the attachment is obtained through a gear train. Rolls easily change and adjust for size. (The Sheffield Corp.)

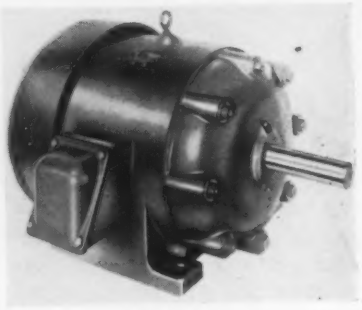
For more data circle No. 48 on postcard, p. 85



Washer Features Built-in Sealing Compound

Partially dome shaped, a new washer has a sealing compound on its underside. Available in mild steel and high-carbon steel, heat treated, as well as stainless steel, the washer also comes in other metals and finishes. When pressure is applied, its dome compresses. This forces the sealant to flow in three directions. The polyvinyl chloride base sealing compound flows downward to seal the space between the clearance hole and fastener threads; outward to seal the space between the contoured underside of the washer and the surface of the fastened material; upward to seal the space between the fastener head and washer hole. This completely seals the fastening. (L. J. Barwood Mfg. Co., Inc.)

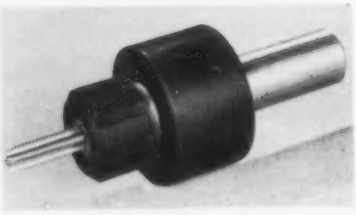
For more data circle No. 49 on postcard, p. 85



Aluminum-housed Motors Are Explosion-Proof

Housed in heat-treated aluminum alloys, new electric motors do not possess external cooling fins. The motors are accepted as "explosion-proof" by Underwriters Laboratories, Inc. Heat transfer characteristics of the alloys make possible a clean, uncluttered frame. Absence of dust-collecting fins makes such motors particularly valuable for use in dusty or dirty atmospheres of an explosive nature, where accumulation around fins would be dangerous. The lightweight motors fit into NEMA rerated frames 254U-256U, 284U - 286U and 324U - 326U. (Electra Motors, Inc.)

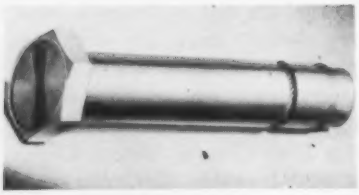
For more data circle No. 50 on postcard, p. 85



Tap Chuck Works Without Screws or Sleeves

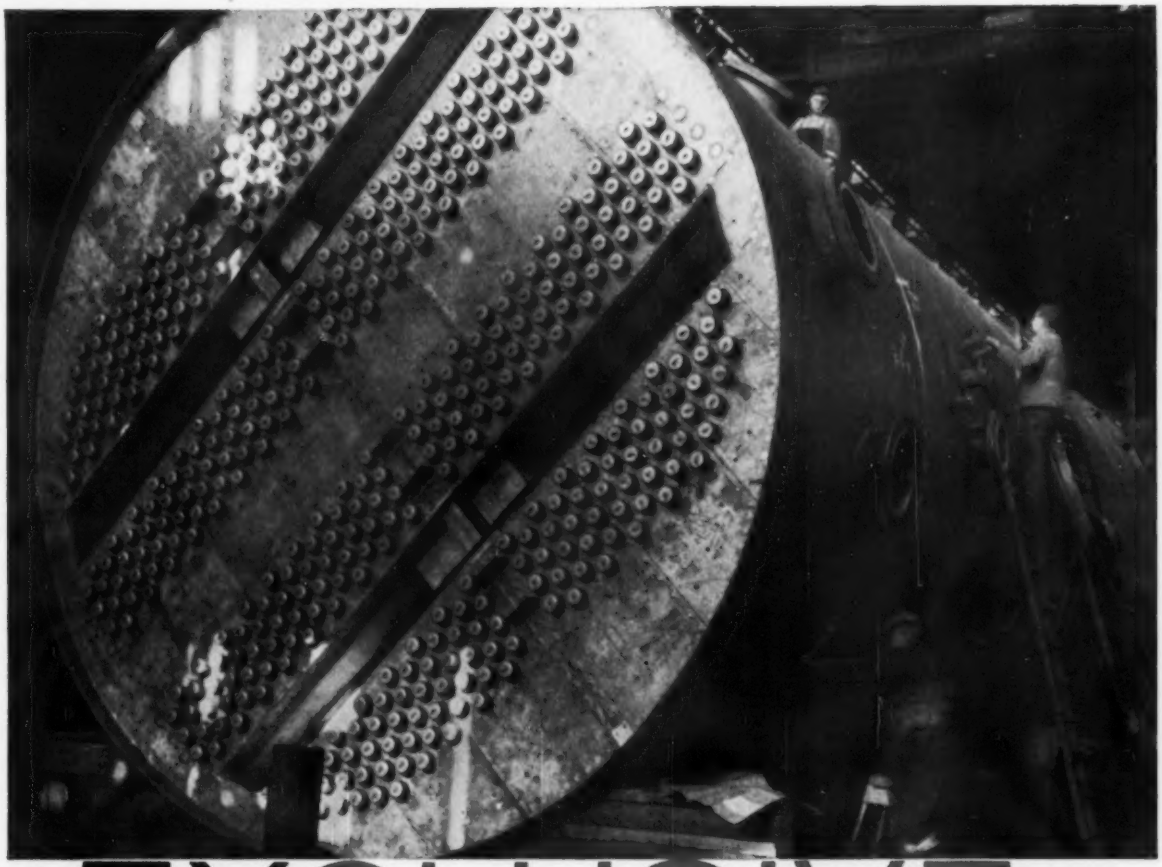
This tap chuck embodies basic collet principles featured in its maker's collet chucks. Screws or sleeves aren't needed. Collets interchange with all other universal chucks. The releasing tap chuck is designed for simplicity and compactness. It uses no springs, cams or pawl. It serves right or left hand tapping without adjustment. (Universal Engineering Co.)

For more data circle No. 51 on postcard, p. 85



Blind Fastener Is Removable and Reusable

Really removable and reusable, this blind-type high-strength shear fastener can be inserted, tightened and later removed from one side of a panel, bulkhead or sheet metal assembly with an inexpensive attachment to a power tool. The bolt can make it easy to remedy hitherto costly production-line mistakes. It extends the use of blind-type fasten-



EXCLUSIVE...

At Sun Ship, STAINLESS STEEL is synonymous with EXCLUSIVE, because Stainless is never exposed to contamination by fabrication with ordinary carbon steel tools.

Working with the 300 to 400 series of alloys, clad steel, aluminum and other alloys, Sun fabricates pressure vessels, tanks, towers, troughs, autoclaves, reactors, hoppers, platework and machinery in all sizes and types. Each to exact specifications. Each with an additional quality feature... EXCLUSIVE.

SUN SHIP

BUILDING & DRY DOCK CO.
CHESTER, PENNSYLVANIA

ers to assemblies that have to be dismantled periodically. In general, it may simplify maintenance and servicing equipment on which they are used. Only one standard power driver with adapter is needed for installation. Up to 35 assemblies a minute can be installed. (Standard Pressed Steel Co.)

For more data circle No. 52 on postcard, p. 85

Fountain Brush

Layout men who dislike constant re-dipping of brushes in bottles when applying marking dyes to work should appreciate a new fountain brush. Consisting of a soft hair brush with hollow handle attached to a squeezeable translucent bulb, the marking brush can cut minutes off layout jobs—and wasted minutes add up to hours of time and money The user squeezes the bulb lightly to get a continuous supply of marking fluid. This can be particularly valuable to layout men preparing horizontal surfaces for fine die work. It can also be used for color coding of bar stock, rods, etc. (The Dykem Co.)

For more data circle No. 53 on postcard, p. 85

Tensile Tester

Up-to-date versions of a tried-and-proven tensile tester boast many advanced features. Backed by 30-years use and development, a table model pendulum type electric hydraulic tester has an infinitely variable drive. This drive gives the unit smoothness, flexibility and versatility. Calibrated for a triple-range reading 0 to 10, 0 to 30, and 0 to 100 lb, the tester has pulling speeds of 2, 4, 8 and 12 ipm, infinitely variable between 2 and 20 ipm. (Thwing-Albert Instrument Co.)

For more data circle No. 54 on postcard, p. 85

Thread Rollers

Thread rolling machines just announced serve heavy-duty production needs of small and medium producers. The thread rollers are of the reciprocating die type. They

roll threads, knurls, gimlet pointed wood screws, machine screws, etc. to the limit allowed by the user's supply of dies. Both 2 or 3-in. lengths of thread can be rolled, depending on the machine. Four machines are presently available. Two are manually fed, and two hopper fed. Rate of production is 60 to 120 pieces per minute. The

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS

FIREBALL AMPERAGE RANGES

METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

miller ELECTRIC MANUFACTURING COMPANY, INC.

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal • APPLETON, WISCONSIN

miller WELDERS

new Shuster units employ 3-hp motors or U. S. Varidrive motors. Maximum thread diameter is 5/16 in. (Mettler Machine Tool, Inc.)

For more data circle No. 55 on postcard, p. 85

Air, Oil Valves

New 0 to 250-PSI manual four-way air and oil valves suffer neither internal nor external leakage. Since many original equipment manufacturers normally do not require

mounting brackets and prefer to paint complete power units after assembly, mounting brackets and baked enamel finishes are eliminated. In answer to requests, ball type handles replace previous lever types. (Barksdale Valves).

For more data circle No. 56 on postcard, p. 85

Friction Saw

Equipped with an electronic feed instead of a hydraulic system, a new friction saw employs a coolant system which assures cool-edge, dry-blade cutting. The saw's one-piece construction permits it to serve as a semi-portable unit. Building an expensive pit is unnecessary. Models have been produced in 40, 75 and 150-hp sizes. They have been production tested for several months in three large steel plants cutting structurals, fabricated sections, rails and pipe. Users estimate the coolant system reduces changing time by over 50 pct while prolonging blade life. The electronic, variable torque feed eliminates need for lines, pumps and storage tanks. Installation requires just four foundation bolts, electrical current supply and periodic access to water. (Ty-Sa-Man Machine Co.)

For more data circle No. 57 on postcard, p. 85

How about

FURNACE ROLLERS
HEAT TREATING TRAYS
FURNACE SHAFTS
ANNEALING BELTS
RETORTS
TUBING

DURALOY

DURASPUN

Which are
Heat Resistant

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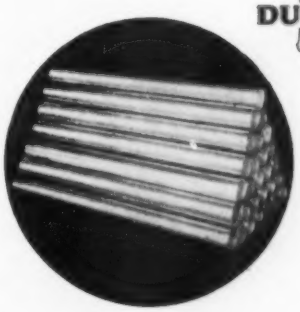

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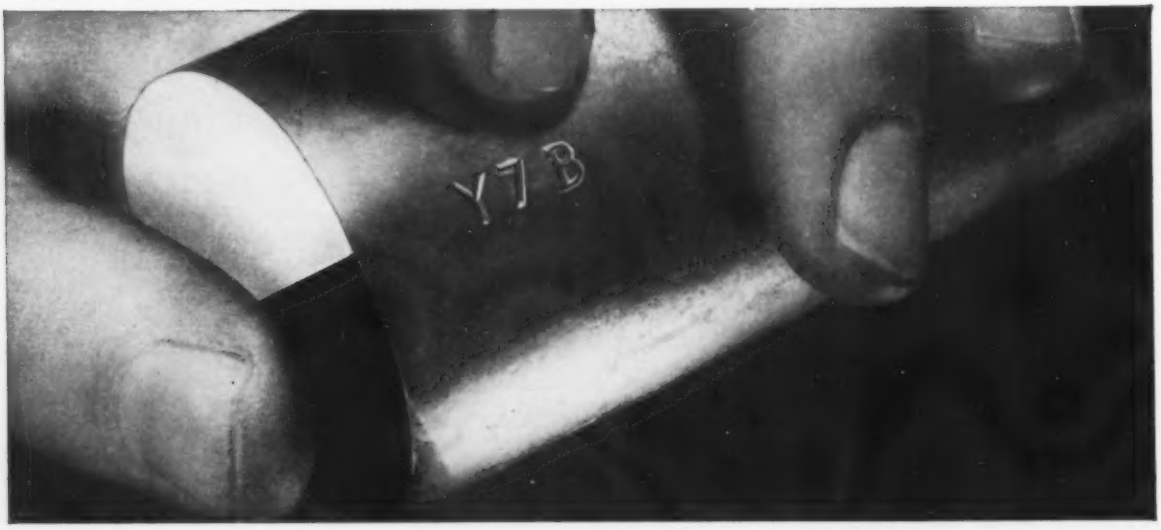

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The Iron Age Summary

Prices Will "Clarify" in August

U. S. Steel will still set the pattern, but it may take until August before the new price level is established.

Some mills may lead off, but prices will settle at the level of the Corporation.

■ Steel prices are expected to go up in August. It probably will take U. S. Steel Corp. and other major producers that long to "clarify" competition and cost factors affecting the steel price structure. By that time, steel firms will have more than enough evidence that a price boost is needed.

The price boost, when it comes, will be on a selective basis. Not all steel products will be affected at the outset. It's even possible that U. S. Steel will follow, rather than lead, in establishing new prices on some products.

Average $5.50 Per Ton—When all the returns are in, the boost will average out to about $5.50 per ton, roughly half the direct and indirect cost boosts incurred by steel firms as the result of the July 1 wage rise, and cost-of-living increases.

David J. McDonald, head of the United Steelworkers, has again indicated that he will not forego the wage and fringe gains due him under his contract with steel firms. These automatic improvements, together with cost-of-living increases of nine cents an hour since last Jan. 1, bring the total cost to steel companies this year to about 26 cents an hour.

Up to U. S. Steel—Most major steel firms have made it clear they will wait for U. S. Steel to set the pattern on prices. But there is a possibility that some will take a chance and announce price boosts on individual products in the hope that U. S. Steel will follow suit. If things don't work out that way, these smaller firms will bring their prices back down to U. S. Steel's level.

Meanwhile, the steel market outlook is still pretty much up in the air. Although there was a market bulge in June, due in part to steel price hedging, the consensus of sales people is that July will be a slow month. It may not set a new low for the year, but with some firms it may come dangerously close.

Hand to Mouth — Apparently some customers, including the big auto firms, are still living hand to mouth on steel inventories. At least one of the big three carmakers is specifying delivery of some products almost on an hourly basis. One steel sales official said—"We're doing more expediting than selling these days." Nearly 80 pct of his shipments are going by truck due to demand for quick delivery.

No one is looking for a real pickup in steel demand until late August or September. Even then, the improvement is expected to be gradual rather than abrupt. Part of the pickup will be due to increased buying by auto companies for new model output. Steel men get the word that the auto firms will not go overboard on new model production until they see how sales are going.

Steel Output, Operating Rates

	This Week	Last Week	Month Ago	Year Ago
Production (Net tons, 000 omitted)	1,404	1,687	1,685	1,990
Ingot Index (1947-1949=100)	87.4	105.0	104.9	125.1
Operating Rates				
Chicago	61.5	69.0	69.0	84.0
Pittsburgh	51.5	61.0	59.0	85.0
Philadelphia	63.0	65.0	63.5	99.0
Valley	36.0	43.5	40.0	61.0
West	70.0	70.0	76.0	102.0
Cleveland	41.0	50.0	36.0	80.0
Buffalo	41.5	44.0	54.0	89.0
Detroit	64.0	66.0	66.0	98.0
South	66.5	68.0	67.0	93.0
South Ohio River	63.0	63.0	61.0	76.0
Upper Ohio River	71.0	71.0*	78.0	73.5
St. Louis	93.0	93.0	97.0	80.0
Northeast	35.5	35.5	35.5	66.5
Aggregate	52.0	62.5	62.4	78.5

*Revised

Prices At a Glance

(cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.967	5.967	5.967	5.670
Pig Iron (Gross ton)	$66.49	$66.49	$66.49	$64.56
Scrap, No. 1 hvy (Gross Ton)	$35.17	$35.17	$36.00	$54.50
No. 2 bundles	$25.83	$25.83	$26.83	$46.00
Nonferrous				
Aluminum ingot	26.10	26.10	26.10	27.10
Copper, electrolytic	25-26.50	25-26.50	25.00	29.25
Lead, St. Louis	11.30	11.30	11.30	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	94.50	94.625	94.50	97.375
Zinc, E. St. Louis	10.00	10.00	10.00	10.50

Price Boosts for Forgings Likely

Forgings buyers should plan July purchases early as price increases are expected around August 1.

A surge of last minute ordering may lengthen delivery times in the coming month.

▪ If you have purchases of forgings planned, it's time to go over your order book carefully.

Forgings are still available at very competitive prices, and may be obtained on an average 2-3 week delivery. Large lots of carbon or alloy forgings may require 4-5 weeks, but even this is very short delivery when the forger's tooling and set-up time is figured.

Price Rumblings—But the purchasing agent is faced with several warning flags. First, forgings prices will advance August 1, or thereabouts. A steel price advance would push forgings prices up about 5-7 pct. The forging industry itself will begin making wage settlements during July, and these should be reflected in an additional 2-4 pct price increase in forgings. The price increase will probably hit about August 1, at least for the forging industry's own labor cost increase. Add the steel price increase if steel base prices go up July 1.

This indicates that forgers will receive hurry calls in the latter two weeks of July from buyers who want to build forging inventories prior to any upward price change. And this raises a second warning flag.

Delivery Stretchout? — Forge plant vacations are heavily concentrated in the first two weeks of July. Most will take about one week of full plant shutdown. They will then operate with a reduced workforce during the remaining three weeks of July. Because of this, deliveries will generally take about one week longer during the month of July, than they did during the month of June.

Add to this a rush of last minute ordering, and you have the possibility of another week's extension of forging delivery times during the month of July.

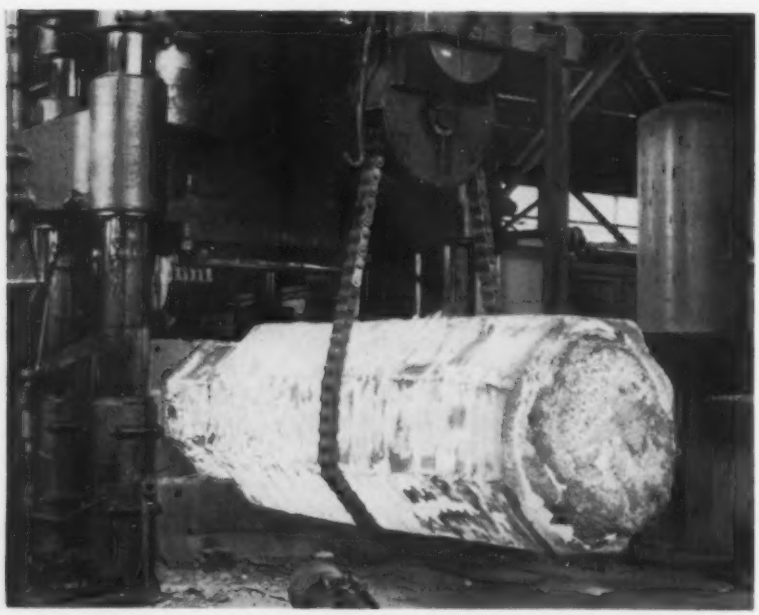
Several major forge plants are already warning their sales forces to be on the lookout for a late July rush in forgings orders. They don't want customers to get trampled in the rush that they expect to develop at that time.

Buy Early—For the careful buyer this suggests that it's good business to plan July buying early. A number of purchasing agents are already checking their forgings suppliers to get a preview look at July order books. This rising interest is also evidenced by the fairly strong inquiry rate reported by many forgings manufacturers.

This concern over July deliveries isn't indicated by any fatness in forgings order books at the moment. Deliveries continue at a low level. The new wave of inquiries hasn't yet boosted forgers' backlogs.

The major exception is high-tolerance forgings in stainless and high temperature alloys. Business in this field has been moving up. A few forgings producers have also boosted their gear blank business. This seems to be predicated more on hard sell emphasis by forge shops which haven't exploited the gear blank market in the past than on a general increase in gear blank buying.

At the moment, prices are still slightly soft among some of the smaller forge shops.



READY FOR BIG SQUEEZE: Ingot weighing in at 205,000 lb goes on 3000 ton, four way press in the forge shop at Erie Forge & Steel Corp.

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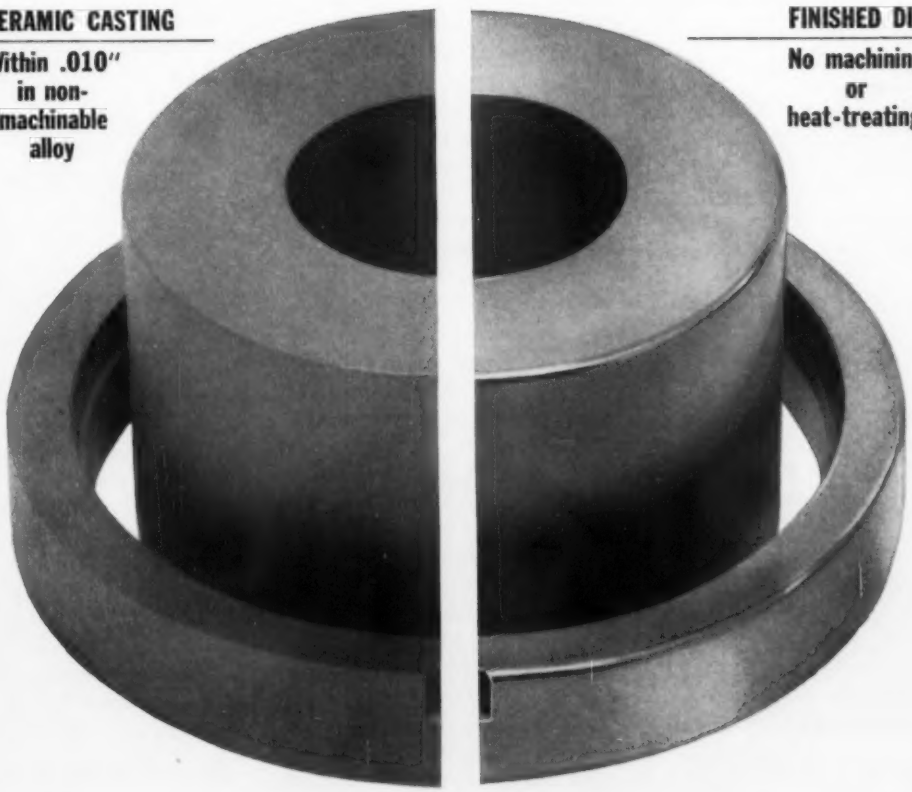

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Users Watch Steel Stocks Closely

Some buyers are wondering if they went overboard in placing June tonnages.

But many will not concede that all their July ordering has been completed.

▪ Steel buyers won't get any vacation from inventory worries during July.

Some consumers are wondering if they stocked up too heavily last month. An IRON AGE check among steel users finds one-third surveyed boosted inventories about 12 pct in June. However, another third cut stocks about 4 pct. And the remainder held supplies steady. Their buying increased, but so did their steel consumption.

Two important groups—automotive users and the warehouses—are still holding inventories down tightly. The automakers have worked steel stocks so far down they are sometimes dependent on mill deliveries to keep work shifts on the job.

Despite continuing sales improvement, warehouses are not in a hurry to increase their mill orders. The spot check shows warehouse inventories are only 2-5 pct above pre-June levels. And July orders from distributors to producers will be within 10 pct of June tonnages.

But most steel buyers admit they are playing the current situation by ear. Plans are made subject to rapid change. Statements that July buying is completed are qualified with the phrase: "But we may need more steel."

Price Increases — Alan Wood Steel Co. was the first producer to announce higher steel prices. In a surprise move, the Conshohocken, Pa., firm posted new base prices, effective July 7, on sheet and plate.

However, the action, which boosted prices an average of $6 a ton, was highly qualified. Harleston R. Wood, Alan Wood president, declared: "We realize our company is too small to maintain a price level different from that of our large competitors. In the event other producers do not change prices by July 7, or increase them by other amounts, we will have no alternative other than to be competitive with their prices.

"Regardless of what other producers do, every ton of steel we ship will be priced to be competitive with companies in our area."

Alan Wood, with a capacity of 800,000 tons, ranks 23rd among steel producers. Most of its producing facilities are down this week for plant vacations and maintenance. As yet the company has not notified its customers officially on the price increases which are $5 a ton on plates, $6 on hot-rolled sheets, and $7 on cold-rolled sheets.

J&L Division Merger—Jones & Laughlin has merged its stainless steel and strip steel divisions into a new Stainless and Strip Division.

The move is designed to weld the firm's specialty divisions into a single production and marketing unit. First step, according to M. K. Schnurr, president of the two divisions, is the combining of sales forces and a merging of district sales offices.

J&L's Stainless Steel Division was formerly the Rotary Electric Steel Co. and the Strip Steel Division was the former Cold Metal Products Co.

Sheet and Strip — "Because of plant vacation shutdowns," says a mill salesman, "July is only a 50 pct month to begin with." Therefore he and others expect a sharp drop in shipments.

Sheet suppliers to the automotive industry say no large tonnages have been delivered. However substantial orders are described as on the books for late July or August shipment.

Plate—Eastern producers list the market as "spotty" with a few good days followed by a slowdown in orders. In the **Midwest,** however, some mills have carryovers in wide carbon and alloy plate. The longer lead times required for delivery seem to have spurred some buyers into placing orders.

West Coast mills report stronger demand for the heavier sizes of plate. An increase in plate will be required for new shipbuilding work and construction of penstock pipe for dams.

Bar—Producers of hot-rolled bar look for a drop in July shipments. June was a better month than May but the improvement was slight and due mainly to price buying.

Cold-finished bar is also slow for July. Mills can generally offer one week delivery on most grades. Reinforcing bar order books are filling at a better rate than either hot-rolled or cold-finished.

Tinplate — Mill shipments are moving at a steady but not sensational rate. June was a little better than May. With price buying not a factor and, with reports of good crop weather, producers are looking for July to show improvement.

PURCHASING AGENT'S CHECKLIST

Trade with Russians favored by West Germans. **P. 26**

New alloys may spark a comeback of titanium. **P. 30**

Orders for machine tools stay at low levels. **P. 49**

COMPARISON OF PRICES

(Effective June 30, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	June 30 1958	June 24 1958	June 2 1958	June 30 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.925¢	4.925¢	4.925¢	4.675¢
Cold-rolled sheets	6.05	6.05	6.05	5.75
Galvanized sheets (10 ga.)	6.60	6.60	6.60	6.30
Hot-rolled strip	4.925	4.925	4.925	4.675
Cold-rolled strip	7.17	7.17	7.17	6.870
Plate	5.12	5.12	5.12	4.87
Plates, wrought iron	13.15	13.15	13.15	10.40
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	50.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.425¢	5.425¢	5.425¢	5.075¢
Cold finished bars	7.30	7.30	7.30	6.85
Alloy bars	6.475	6.475	6.475	6.125
Structural shapes	5.275	5.275	5.275	5.00
Stainless bars (No. 302)	45.00	45.00	45.00	43.25
Wrought iron bars	14.45	14.45	14.45	11.50
Wire: (per pound)				
Bright wire	7.65¢	7.65¢	7.65¢	7.20¢
Rails: (per 100 lb.)				
Heavy rails	$5.525	$5.525	$5.525	$5.275
Light rails	6.50	6.50	6.50	6.25
Semifinished Steel: (per net ton)				
Rerolling billets	$77.50	$77.50	$77.50	$74.00
Slabs, rerolling	77.50	77.50	77.50	74.00
Forging billets	96.00	96.00	96.00	91.50
Alloy blooms, billets, slabs	114.00	114.00	114.00	107.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.15¢	6.15¢	6.15¢	5.80¢
Skelp	4.875	4.875	4.875	4.625
Finished Steel Composite: (per pound)				
Base price	5.967¢	5.967¢	5.967¢	5.670¢

	June 30 1958	June 24 1958	July 1 1958	June 30 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.97	$70.97	$70.97	$68.88
Foundry, Valley	66.50	66.50	66.50	65.00
Foundry, Southern Cin'ti	73.87	73.87	73.87	67.17
Foundry, Birmingham	62.50	62.50	62.50	59.00
Foundry, Chicago	66.50	66.50	66.50	65.00
Basic, del'd Philadelphia	70.47	70.47	70.47	68.38
Basic, Valley furnace	66.00	66.00	66.00	64.50
Malleable, Chicago	66.50	66.50	66.50	65.00
Malleable, Valley	66.50	66.50	66.50	65.00
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	$66.49	$66.49	$66.49	$64.56
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$37.50	$37.50	$37.50	$56.50
No. 1 steel, Phila. area	33.50	33.50	34.00	55.50
No. 1 steel, Chicago	34.50	34.50	36.50	51.50
No. 1 bundles, Detroit	31.50	31.50	28.50	47.50
Low phos., Youngstown	38.50	37.50	37.50	56.50
No. 1 mach'y cast, Pittsburgh	48.50	48.50	48.50	57.50
No. 1 mach'y cast, Phila.	47.50	47.50	47.50	56.50
No. 1 mach'y cast, Chicago	45.50	45.50	47.50	50.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$35.17	$35.17	$36.00	$54.50
No. 2 bundles	25.83	25.83	26.83	46.00
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.38	$15.38	$15.38	$15.38
Foundry coke, prompt	$17.50-$19	$17.50-$19	$17.50-$19	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	25-26.50	25-26.50*	25.00	29.25
Copper, Lake, Conn.	25.00	25.00*	25.00	29.25
Tin, Straits, N. Y.	94.50*	94.625	94.50	97.375
Zinc, East St. Louis	10.00	10.00	10.00	10.50
Lead, St. Louis	11.30	11.30	11.30	13.80
Aluminum, virgin ingot	26.10	26.10	26.10	27.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Market Becalmed In July Doldrums

Most of the trade hopes to ride out the July slump, looking for better things in August.

But hoped-for steel upturn looks farther and farther away as sales dwindle.

▪ Pessimism dominates the market, although most prices hold at recent levels.

The trade is still determined not to yield in distress sales in July, but as time goes by the upturn in steelmaking appears farther and farther away.

An indication of the market trend is found in automotive lists. In spite of very small tonnage, there was no indication of mill interest. Bundles bought on speculation were picked up at very close to last month's prices.

Exception to the general apathy is a strengthening in Cleveland and the Valley, where No. 1 steelmaking grades rose slightly.

Pittsburgh — Prices of dealer openhearth grades are still holding here despite a weaker tone to the market. Price firmness results from the market sitting on bottom. The recent flurry gave yards some cash to live on, and they are not ready to sell for distress prices. However, mill demand is weaker than ever. Industrial lists went for about $1 under last month. Purchase of turnings for $22 by a nearby mill has tightened the local supply.

Chicago — A sharp increase in the broker buying price for factory bundles caused a flurry in this market, but failed to influence other grades. Mill buyers held the price line. Slower operations for some large steel producers in the area took the steam out of the price activity in factory bundles. If anything, the flurry strengthened dealer resistance to broker attempts to reduce broker buying prices. The amount of scrap generated in the district is expected to fall sharply this month. Both brokers and dealers are reported laying down scrap for sale in an August market expected to be stronger.

Philadelphia—A local mill came into the market for a small quantity of No. 2 heavy melting at quoted prices. Otherwise, the steel scrap market here is exceptionally quiet.

New York—Steelmaking grades are off $1 to $2 per ton, depending on grade, with a top of $26 for No. 1 heavy melting. No. 2 steel is down $2 and No. 2 bundles at least $1. Main reason for the decline is the end of present export contracts, with the last ship scheduled to sail July 15. A leading domestic consumer is paying a small premium for good quality bundles, but is extremely fussy about quality. Blast furnace grades are holding at low levels. Stainless is weaker, but prices are holding.

Detroit — Industrial lists closed last week at about the same levels as a month ago. Apparently there was not enough scrap being offered to depress the market (only about 18,000 tons of No. 1 bundles), nor enough mill interest to raise the market. One broker said a notable lack of mill interest left the market high and dry. He said he would have bid more if there were indications mills' wanted scrap. On the lists, No. 1 bundles went for an average of $37.50.

Cleveland—Industrial lists went up another $1 over small excess tonnage of a week before. Most moved on speculation to one broker with about a $2 spread between early and late lists. The dealer market continues slow, with a $37 order for prime grades in the Valley finding few takers.

St. Louis — Mills continue to obtain their melt for a high operating rate at unchanged prices in a strong market. The future depends on whether the market for finished products is set higher depends to some extent on new steel prices. Some dealers are holding off for a higher market.

Birmingham — Scrap activity in the area continues light but firm. Brokers anticipate July purchases will be at the same or slightly higher prices than in June. Rail and specialty items went at higher prices.

Cincinnati—The market is expected to decline as a major mill halts steelmaking for three weeks to put in new facilities. The market is very slow with plant vacation shutdowns cutting sharply into production.

Buffalo — Inactivity that has characterized this market continues. No price changes have resulted in the slow market. Water movement of scrap has also dropped sharply.

Boston — The outlook for the market here is gloomy. There is little activity of any kind, and any price movement is expected to be downward.

West Coast—Prices remain unchanged. The market is at a virtual standstill. Although mills are taking enough to meet their consumption requirements, quantity is so small it doesn't mean much.

SCRAP PRICES *(Effective June 30, 1958)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 1 factory bundles	41.00 to 42.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and ms. turn.	15.00 to 16.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. punch'gs plate	40.00 to 41.00
Heavy turnings	32.00 to 33.00
No. 1 RR hvy. melting	40.00 to 41.00
Scrap rails, random lgth.	50.00 to 51.00
Rails 2 ft and under	53.00 to 54.00
RR steel wheels	45.00 to 46.00
RR spring steel	45.00 to 46.00
RR couplers and knuckles	45.00 to 46.00
No. 1 machinery cast.	48.00 to 49.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	37.00 to 38.00
Stainless	
18-8 bundles and solids	175.00 to 185.00
18-8 turnings	105.00
430 bundles and solids	100.00 to 105.00
410 turnings	45.00

Chicago

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	34.00 to 35.00
No. 1 factory bundles	43.00 to 44.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	34.00 to 35.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. forge crops	44.00 to 45.00
Low phos. punch'gs plate	41.00 to 42.00
Low phos. 3 ft and under	39.00 to 40.00
No. 1 RR hvy. melting	41.00 to 42.00
Scrap rails, random lgth.	47.00 to 48.00
Rerolling rails	54.00 to 55.00
Rails 2 ft and under	51.00 to 52.00
Locomotive tires cut	48.00 to 49.00
Cut bolsters & side frames	45.00 to 46.00
Angles and splice bars	49.00 to 50.00
RR steel car axles	60.00 to 61.00
RR couplers and knuckles	45.00 to 46.00
No. 1 machinery cast.	45.00 to 46.00
Cupola cast.	38.00 to 39.00
Heavy breakable cast.	35.00 to 36.00
Cast iron brake shoes	36.00 to 37.00
Cast iron wheels	33.00 to 34.00
Malleable	49.00 to 50.00
Stove plate	36.00 to 37.00
Steel car wheels	43.00 to 44.00
Stainless	
18-8 bundles and solids	175.00 to 180.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	100.00 to 105.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	33.00 to 34.00
Machine shop turn.	14.00 to 15.00
Mixed bor. short turn.	15.00 to 16.00
Cast iron borings	16.00 to 17.00
Shoveling turnings	17.00 to 18.00
Clean cast. chem. borings	24.00 to 25.00
Low phos. 5 ft and under	38.00 to 39.00
Low phos. 2 ft and under	39.00 to 40.00
Low phos. punch'gs	39.00 to 40.00
Elec. furnace bundles	34.00 to 35.00
Heavy turnings	28.00 to 29.00
RR steel wheels	42.50 to 43.50
RR spring steel	42.50 to 43.50
Rails 18 in. and under	55.00 to 56.00
Cupola cast.	37.00 to 38.00
Heavy breakable cast.	39.00 to 40.00
Cast iron car wheels	41.00 to 42.00
Malleable	56.00 to 57.00
Unstripped motor blocks	30.00 to 31.00
No. 1 machinery cast.	47.00 to 48.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	12.00 to 13.00
Low phos. 18 in. and under	39.00 to 40.00
Rails, random length	43.00 to 44.00
Rails, 18 in. and under	53.00 to 54.00
No. 1 cupola cast.	39.00 to 40.00
Hvy. breakable cast.	32.00 to 33.00
Drop broken cast.	45.00 to 46.00

Cleveland

No. 1 hvy. melting	$33.50 to $34.50
No. 2 hvy. melting	24.50 to 25.50
No. 1 dealer bundles	33.50 to 34.50
No. 1 factory bundles	39.00 to 40.00
No. 2 bundles	20.50 to 21.50
No. 1 busheling	33.50 to 34.50
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Cut structural & plates, 2 ft & under	38.00 to 39.00
Drop forge flashings	33.50 to 34.50
Low phos. punch'gs plate	33.50 to 34.50
Foundry steel, 2 ft & under	35.00 to 36.00
No. 1 RR hvy. melting	35.00 to 36.00
Rails 2 ft and under	53.00 to 54.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	14.00 to 15.00
Steel axle turnings	17.00 to 18.00
Railroad cast.	46.00 to 47.00
No. 1 machinery cast.	46.00 to 47.00
Stove plate	42.00 to 43.00
Malleable	58.00 to 59.00
Stainless	
18-8 bundles	175.00 to 185.00
18-8 turnings	95.00 to 100.00
430 bundles	90.00 to 95.00
430 turnings	35.00 to 40.00

Buffalo

No. 1 hvy. melting	$26.00 to $27.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 busheling	26.00 to 27.00
No. 1 dealer bundles	26.00 to 27.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	12.00 to 13.00
Low phos. plate	32.00 to 33.00
Structurals and plate, 2 ft and under	35.00 to 36.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
RR steel wheels	36.00 to 37.00
RR spring steel	32.00 to 33.00
RR couplers and knuckles	32.00 to 33.00
No. 1 machinery cast.	43.00 to 44.00
No. 1 cupola cast.	39.00 to 40.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	15.00 to 16.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
No. 1 RR hvy. melting	38.00 to 39.00
Rails, random lengths	45.00 to 46.00
Rails, 18 in. and under	50.00 to 51.00
Angles and splice bars	43.00 to 44.00
Std. steel car axles	52.00 to 53.00
RR specialties	41.00 to 42.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	32.00 to 33.00
Cast iron brake shoes	35.00 to 36.00
Stove plate	40.00 to 41.00
Cast iron car wheels	37.00 to 38.00
Rerolling rails	55.00 to 56.00
Unstripped motor blocks	34.00 to 35.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	30.00 to 31.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	34.00 to 35.00
Elec. furnace, 3 ft & under	32.00 to 33.00
Bar crops and plate	39.00 to 40.00
Structural and plate, 2 ft.	38.00 to 39.00
No. 1 RR hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	42.00 to 43.00
Rails, 18 in. and under	46.00 to 47.00
Angles & splice bars	40.00 to 41.00
Rerolling rails	53.00 to 54.00
No. 1 cupola cast.	51.00 to 52.00
Stove plate	49.00 to 50.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	35.00 to 36.00
Unstripped motor blocks	39.00 to 40.00

Youngstown

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	12.50 to 13.50
Shoveling turnings	17.50 to 18.50
Cast iron borings	17.50 to 18.50
Low phos. plate	38.00 to 39.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$25.00 to $26.00
No. 2 hvy. melting	22.00 to 23.00
No. 2 dealer bundles	14.00 to 15.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	10.00 to 11.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	34.00 to 35.00
Mixed yard cast.	32.00 to 33.00
Charging box cast.	31.00 to 32.00
Heavy breakable cast.	31.00 to 32.00
Unstripped motor blocks	22.00 to 23.00
Stainless	
18-8 prepared solids	155.00 to 160.00
18-8 turnings	55.00 to 60.00
430 prepared solids	65.00 to 70.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	28.00 to 29.00
Drop forge flashings	27.00 to 28.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	11.00 to 12.00
Low phos. punch'gs plate	30.00 to 31.00
No. 1 cupola cast.	36.00 to 38.00
Heavy breakable cast.	26.00 to 27.00
Mixed cupola cast.	37.00 to 38.00
Automotive cast.	37.00 to 38.00
Stainless	
18-8 bundles and solids	170.00 to 175.00
18-8 turnings	75.00 to 80.00
430 bundles and solids	80.00 to 85.00
410 turnings	20.00 to 25.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	17.00 to 18.00
No. 1 dealer bundles	22.00 to 23.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	22.00 to 23.00
Machine shop turn.	5.00 to 6.00
Mixed bor. and short turn.	5.00 to 6.00
Shoveling turnings	7.00 to 8.00
Clean cast. chem. borings	14.00 to 15.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	26.00 to 27.00
Heavy breakable cast.	27.00 to 28.00
Stove plate	26.00 to 27.00
Unstripped motor blocks	22.00 to 23.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	11.00 to 13.00
Cast iron borings	11.00 to 13.00
Elec. furn 1 ft and under (foundry)	43.00
No. 1 RR hvy. melting	33.00
No. 1 cupola cast.	41.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$45.00 to 50.00

Industry Concedes On Seaton Plan

Outright opposition to the Seaton Plan has vanished.

Industry has turned its efforts to seeking amendments.

Senate Committee passes the bill with minor revisions.

■ The storm of industry protest to the Seaton Plan has subsided.

The Domestic Minerals Stabilization Bill, unofficially assigned the name of the Secretary of Interior, who introduced it, has been approved by the Senate Interior Committee.

It has yet to be voted on by the Senate. But recent moves by the domestic nonferrous producers and their spokesmen amount to a concession to the liberal trade policies of the Administration.

When the President deferred action on Tariff Commission recommendations for higher lead and zinc tariffs, there was hardly a murmur of protest from industry.

And all of the recent suggestions to help the domestic industry have been in the form of additions or amendments to the Seaton Plan. Significantly, there has been little or no mention of higher tariffs.

Plainly, nonferrous producers, particularly of lead and zinc, have turned their efforts to getting what they call adequate protection from imports, through the framework of the Seaton Plan.

There appear to be only two major issues to be met before the way is clear to follow through on the proposals. One is the money to support the five-year program.

A number of supporters are wary of depending on yearly appropriations from Congress. They point out the whole program could then be scuttled by a few people in the right places. Their solution: Interior Dept. should borrow the money it needs, estimated at about $350 million.

Interior Secretary Fred Seaton has conceded that lead-zinc industry needs more help than his original proposal. The Senate Interior Committee approved his suggestion of a premium subsidy for the initial 500 ton sales of each producer each quarter. This is aimed at giving more help to smaller producers.

For the initial 500 tons, suggested subsidy for lead is the difference between the market price and 17¢ per lb. For zinc payment, it would be the difference between the market price and 14½¢ per lb.

For the remainder of the metal subsidized, payment passed by the Committee would be the difference between the market price and 15½¢ for lead and 13½¢ for zinc. The Administration had suggested 14¾¢ for lead, 12¾¢ for zinc.

But the domestic lead-zinc industry wants the government to stockpile its metal. Mr. Seaton and the Committee opposed this because they say the government has already tried buying lead and zinc, and it hasn't cured the ills of the industry.

The Senate Interior Committee voted 7 to 4 against including aluminum in the bonus or subsidy program.

The revision to stockpile 150,000 tons of copper at the market price not to exceed 27½¢ per lb was also passed, along with subsidies for fluorspar and tungsten. There was no appreciable opposition on these points.

A lot had been predicted for the Seaton plan, both pro and con. But it held up in most major points.

Zinc

Adding emphasis to the weakness of the zinc market, American Smelting and Refining Co. announced it shut down another block of retorts at its Amarillo, Tex., smelter on July 1.

This cut output by about 500 tons per month, and brings the total drop in this plant's zinc output to 25 pct.

Tin prices for the week: June 25—94.75; June 26—94.75; June 27—94.50; June 30—94.50.*

*Estimate

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in June based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	25.26
Copper, Lake	25.00
Straits Tin, New York	94.488
Zinc, E. St. Louis	10.00
Lead, St. Louis	11.04
Aluminum ingot	26.10

Note: Quotations are going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.00	26.00	4/1/58
Aluminum ingot	26.10	28.10	4/1/58
Copper (E)	25-26.50	25.00	5/16/58
Copper (CS)	25.50	26.50	5/23/58
Copper (L)	25.90	27.00	1/13/58
Lead, St. L.	11.30	10.80	6/18/58
Lead, N. Y.	11.50	11.00	6/18/58
Magnesium ingot	36.00	34.00	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	84.50	12/6/56
Titanium sponge	185-200	200-230	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco, Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see above; other primary prices, pg. 104.

News!

FEDERATED METALS DIVISION

Appointed National Distributor for

REVERE PRIMARY ALUMINUM PIG AND INGOT

for foundry and die casting use

Call the Federated Sales Office near you. Stocks of Revere Primary Aluminum will be carried at strategic points throughout the United States.

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Phone: Townsend 8-9000

EL PASO, TEXAS
1213 Mills Building
(Asarco Mercantile Co.)
Phone: 3-1852

HOUSTON 29, TEXAS
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Phone: Orchard 4-7611

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Phone: Hilltop 5-7430

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Phone: Prospect 1-8220

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Phone: Angelus 8-4291

PORTLAND 9, OREGON
1900 N.W. 18th Avenue
Phone: Capitol 7-1404

SALT LAKE CITY 1, UTAH
700 Crandall Bldg.
Phone: Empire 4-3601

SAN FRANCISCO 24, CALIF.
1901 Army Street
Phone: Atwater 2-3340

SEATTLE 4, WASHINGTON
101 Dakota Street
Phone: Main 3-7160

ASARCO

AMERICAN SMELTING AND REFINING COMPANY

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	44.6	42.3	41.1	41.7
5052	52.0	46.9	45.2	44.4
6061-0	49.4	45.0	43.2	43.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	45.0-46.8	58.4-62.1
12-14	45.7-47.2	59.3-63.8
24-26	49.0-49.5	70.1-74.8
36-38	58.0-58.6	94.2-97.8

Screw Machine Stock—2011-T-3

Size"	¼	⅜-⅝	¾-1	1¼-1½
Price	61.0	60.5	59.0	56.6

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	108.1
AZ31B Spec.	.....	93.3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	69.6	70.7	75.6	89.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 27.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	128
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Chot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	48.13	.....	45.36	48.32
Brass, 70/30	42.69	43.23	42.63	45.60
Brass, Low	44.90	45.44	44.84	47.71
Brass, R L	45.67	46.21	45.61	48.48
Brass, Naval	47.07	.....	41.38	50.48
Muntz Metal	45.19	.....	41.00	.....
Bomm. Bz.	46.98	47.52	46.92	49.54
Mang. Bz.	50.81	.....	44.91	.....
Phos. Bz. 5%	67.17	.....	67.67	.....

Free Cutting Brass Rod 31.03

TITANIUM

(Freight included in 5000 lbs)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $5.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; alloy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadium, del'd ..... $ 1.55
Calcium,, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb)....$2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 39.50 to 50.00
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9%, dollars per troy oz..$2 25
Iridium, dollars per troy oz....$70 to $80
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $228 to $231
Nickel oxide sinter at Cooper Cliff, Ont., contained nickel 71.25
Palladium, dollars per troy oz...$19 to $21
Platinum, dollars per troy oz...$62 to $70
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 88.625
Thorium, per kg. $43.00
Vanadium ..... $ 2.45
Zirconium sponge ..... $ 5.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 27.00
No. 120 ..... 26.25
No. 123 ..... 25.75
80-10-10 ingot
No. 305 ..... 31.25
No. 315 ..... 29.25
88-10-2 ingot
No. 210 ..... 38.25
No. 215 ..... 34.00
No. 245 ..... 30.75
Yellow ingot
No. 405 ..... 22.75
Manganese bronze
No. 421 ..... 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.00-24.25
0.60 copper max. 23.75-24.00
Piston alloys (No. 122 type)..23.25-24.25
No. 12 alum. (No. 2 grade)...21.00-21.75
108 alloy 21.50-22.25
195 alloy 24.00-25.50
13 alloy(0.60 copper max.)...23.75-24.00
AXS-679 (1 pct zinc) 21.25-22.25

(Effective June 27, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.00-23.50
Grade 2—92-95% 21.00-21.75
Grade 3—90-92% 20.00-20.75
Grade 4—85-90% 17.00-18.00

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	21	20¼
Yellow brass	16⅛	14½
Red brass	18⅝	17⅞
Comm. bronze	19¼	18½
Mang. bronze	14⅞	14⅛
Yellow brass rod ends	15⅝	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 22
No. 2 copper wire 20½
Light copper 18¾
*Refinery brass 20½
Copper bearing material 19½
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 22
No. 2 copper wire 20½
Light copper 18¾
No. 1 composition 19½
No. 1 comp. turnings 19
Hvy. yellow brass solids 14
Brass pipe 14¾
Radiators 15¾

Aluminum

Mixed old cast ..... 11 —11½
Mixed new clips ..... 15 —15½
Mixed turnings, dry ..... 12½—13

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 20 —20½
No. 2 copper wire ..... 18 —18½
Light copper ..... 16 —16½
Auto radiators (unsweated) . 12 —12½
No. 1 composition ..... 16 —16½
No. 1 composition turnings.. 15 —15½
Cocks and faucets ..... 13 —13½
Clean heavy yellow brass ... 11 —11½
Brass pipe ..... 13 —13½
New soft brass clippings .... 13½—14
No. 1 brass rod turnings .... 11 —11½

Aluminum

Alum. pistons and struts .... 5 — 5½
Aluminum crankcases ..... 9 — 9½
1100 (2S) aluminum clippings 12½—13
Old sheet and utensils ..... 9 — 9½
Borings and turnings ..... 6 — 6½
Industrial castings ..... 9 — 9½
2024 (24S) clippings ..... 10½—11

Zinc

New zinc clippings ..... 4 — 4½
Old zinc ..... 3 — 3¼
Zinc routings ..... 1¾— 2
Old die cast scrap ..... 1½— 1¾

Nickel and Monel

Pure nickel clippings 42-45
Clean nickel turnings 37-40
Nickel anodes 42-45
Nickel rod ends 42-45
New Monel clippings 28-29
Clean Monel turnings 20-23
Old sheet Monel 25-26
Nickel silver clippings, mixed. 18
Nickel silver turnings, mixed 15

Lead

Soft scrap lead ..... 6¾— 7
Battery plates (dry) ..... 2¼— 2½
Batteries, acid free ..... 1½— 1¾

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 10¼—10¾
Monotype ..... 10¼—10½
Lino. and stereotype ..... 9¼— 9½
Electrotype ..... 8¼— 8½
Hand picked type shells .... 6¼— 6¾
Lino. and stereo. dross ..... 2¼— 2½
Electro dross ..... 1¾— 2

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$114.00 *B3*		5.325 *B3*	7.80 *B3*	5.325 *B3*						
	Buffalo, N. Y.	$77.50 *R3, B3*	$96.00 *R3, B3*	$114.00 *R3, B3*	6.225 *B3*	5.325 *B3*	7.80 *B3*	5.325 *B3*	4.925 *R3, B3*	7.15 *S10*	7.325 *B3*			
	Phila., Pa.									7.70 *P15*				
	Harrison, N. J.													15.05 *C11*
	Conshohocken, Pa.		$101.00 *A2*	$121.00 *A2*					4.975 *A2*		7.325 *A2*			
	New Bedford, Mass.									7.60 *R6*				
	Johnstown, Pa.	$77.50 *B3*	$96.00 *B3*	$114.00 *B3*		5.325 *B3*	7.80 *B3*							
	Boston, Mass.									7.70 *T8*				15.40 *T8*
	New Haven, Conn.									7.60 *D1*				
	Baltimore, Md.									7.15 *T8*				
	Phoenixville, Pa.					5.325 *P2*		5.325 *P2*						
	Sparrows Pt., Md.								4.925 *B3*		7.325 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$114.00 *N8*						7.60 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.70 *N7* 7.70 *A5*				15.40 *N7* 15.20 *T8*
MIDDLE WEST	Alton, Ill.								5.125 *L1*					
	Ashland, Ky.								4.925 *A7*					
	Canton-Massillon, Dover, Ohio		$98.50 *R3*	$114.00 *R3, T5*						7.15 *G4*		10.45 *G4*		14.85 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$77.50 *U1, R3*	$96.00 *U1, R3,W8*	$114.00 *U1, R3,W8*	6.225 *U1*	5.275 *U1, W8,P13*	7.75 *U1,Y1 W8*	5.275 *U1*	4.925 *W8, N4,A1*	7.25 *A1,T8 M8*			8.10 *W8, S9,I3*	15.05 *A1, S9,G4*
	Cleveland, Ohio									7.15 *A5,J3*		10.45 *A5*	8.10 *J3*	
	Detroit, Mich.			$114.00 *R5*					4.925 *G3, M2*	7.15 *M2,D1, D2,G3,P11*	7.325 *G3*	10.60 *D2* 10.50 *G3*	8.10 *G3*	15.05 *G3*
	Anderson, Ind.									7.15 *G4*				
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$77.50 *U1*	$96.00 *U1*	$114.00 *U1, Y1*		5.275 *U1, I3*	7.75 *U1, I3*	5.275 *I3*	4.925 *U1, I3,Y1*	7.15 *Y1*	7.325 *U1, I3,Y1*	10.60 *Y1*	8.10 *U1, Y1*	
	Sterling, Ill.	$77.50 *N4*				5.275 *N4*			5.025 *N4*					
	Indianapolis, Ind.									7.30 *J3*				15.20 *J3*
	Newport, Ky.												8.10 *A9*	
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		$96.00 *S1, C10*	$114.00 *C10,S1*					4.925 *R3, S1*	7.15 *R3,T4 S1*	7.325 *R3, S1*	10.50 *S1* 10.45 *R3*	8.10 *S1*	15.05 *S1*
	Owensboro, Ky.	$77.50 *G5*	$96.00 *G5*	$114.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$77.50 *U1, P6*	$96.00 *U1, C11,P6*	$114.00 *U1, C11,B7*	6.225 *U1*	5.275 *U1, J3*	7.75 *U1, J3*	5.275 *U1*	4.925 *P6*	7.15 *J3,B4*			8.10 *S9*	15.05 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.225 *W3*	5.275 *W3*		5.275 *W3*	4.925 *W3*	7.15 *W3,F3*	7.325 *W3*	10.50 *W3*		
	Youngstown, Ohio	$77.50 *R3*	$96.00 *Y1, C10*	$114.00 *Y1*			7.75 *Y1*			7.15 *Y1,J3*	7.325 *U1, Y1*	10.65 *Y1*	8.10 *U1, Y1*	15.05 *J3* 10.65 *Y1*
WEST	Fontana, Cal.	$88.00 *K1*	$105.50 *K1*	$135.00 *K1*		6.075 *K1*	8.55 *K1*	6.225 *K1*	5.675 *K1*	9.00 *K1*				
	Geneva Utah		$96.00 *C7*			5.275 *C7*	7.75 *C7*							
	Kansas City, Mo.					5.375 *S2*	7.85 *S2*						8.35 *S2*	
	Los Angeles, Torrance, Cal.		$105.50 *B2*	$134.00 *B2*		5.975 *C7, B2*	8.45 *B2*		5.675 *C7, B2*	9.05 *J3* 9.20 *C1*			9.30 *B2*	17.25 *J3*
	Minnequa, Colo.					5.575 *C6*			6.025 *C6*	9.10 *K1*				
	Portland, Ore.					6.025 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$105.50 *B2*			5.925 *B2*	8.40 *B2*		5.675 *C7, B2*					
	Seattle, Wash.		$109.50 *B2*			6.025 *B2*	8.50 *B2*		5.925 *B2*					
SOUTH	Atlanta, Ga.					5.475 *A8*			4.925 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$77.50 *T2*	$96.00 *T2*			5.275 *T2, R3,C16*	7.75 *T2*		4.925 *T2, R3,C16*		7.325 *T2*			
	Houston, Lone Star, Texas		$101.00 *S2*	$119.00 *S2*		5.375 *S2*	7.85 *S2*						8.35 *S2*	

(Effective June 27, 1958)

IRON AGE

STEEL PRICES

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		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Bethlehem, Pa.												
	Buffalo, N. Y.	4.925 *B3*	6.05 *B3*				7.275 *B3*	8.975 *B3*		6.15 *W6*			
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	4.975 *A2*	6.10 *A2*				7.325 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.15 *B3*			
	Fairless, Pa.	4.975 *U1*	6.10 *U1*				7.325 *U1*	9.025 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	4.925 *B3*	6.05 *B3*	6.60 *B3*			7.275 *B3*	8.975 *B3*	9.725 *B3*	6.25 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.45 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.35 *L1*			
	Ashland, Ky	4.925 *A7*		6.60 *A7*	6.625 *A7*								
	Canton-Massillon, Dover, Ohio			6.60 *R3, R1*									
	Chicago, Joliet, Ill.	4.925 *W8, A1*					7.275 *U1*			6.15 *A5, R3,W8, N4, K2*			
	Sterling, Ill.									6.25 *N4, K2*			
	Cleveland, Ohio	4.925 *R3, J3*	6.05 *R3, J3*		6.625 *R3*		7.275 *R3, J3*	8.975 *R3, J3*		6.15 *A5*			
	Detroit, Mich.	4.925 *G3, M2*	6.05 *G3 M2*				7.275 *G3*	8.975 *G3*					
	Newport, Ky	4.925 *A1*	6.05 *A1*										
	Gary, Ind. Harbor, Indiana	4.925 *U1, I3,Y1*	6.05 *U1, I3,Y1*	6.60 *U1, I3*	6.625 *U1, I3,Y1*	7.00 *U1*	7.275 *U1, Y1,I3*	8.975 *U1, Y1*		6.15 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1,Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.025 *G2*	6.15 *G2*	6.70 *G2*	6.725 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.70 *C9*						6.25 *C9*			
	Mansfield, Ohio		6.05 *E2*			7.00 *E2*							
	Middletown, Ohio		6.05 *A7*	6.60 *A7*	6.625 *A7*	7.00 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	4.925 *R3, N3,S1*	6.05 *R3*	6.60 *R3*	6.625 *N3, S1*	7.00 *N3, S1,R3*	7.275 *R3*	8.975 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	4.925 *U1, J3,P6*	6.05 *U1, J3,P6*	6.60 *U1, J3*	6.625 *U1*		7.275 *U1, J3*	8.975 *U1, J3*	9.725 *U1*	6.15 *A5, J3,P6*	$10.05 *U1, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	4.925 *P7*	6.05 *P7*							6.15 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.925 *W3, W5*	6.05 *W3, F3,W5*	6.60 *W3, W5*		7.00 *W3, W5*	7.275 *W3*	8.975 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	4.925 *U1, Y1*	6.05 *Y1*		6.625 *Y1*		7.275 *Y1*	8.975 *Y1*		6.15 *Y1*			
WEST	Fontana Cal.	5.675 *K1*	7.30 *K1*				8.025 *K1*	10.275 *K1*			$10.90 *K1*	$9.50 *K1*	
	Geneva, Utah	5.025 *C7*											
	Kansas City, Mo.									6.40 *S2*			
	Los Angeles, Torrance, Cal.									6.95 *B2*			
	Minnequa, Colo.									6.40 *C6*			
	San Francisco, Niles, Pittsburgh, Cal.	5.625 *C7*	7.00 *C7*	7.35 *C7*						6.95 *C7*	$10.90 *C7*	$9.50 *C7*	
	Seattle, Wash.												
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	4.925 *T2, R3*	6.05 *T2, R3*	6.60 *T2, R3*	6.625 *T2*					6.15 *T2, R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Tex.									6.40 *S2*			

† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box.

* COKES: 1.50-lb. add 25¢.

ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.

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IRON AGE

STEEL PRICES

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		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfrs'. Bright
EAST	Bethlehem, Pa.				6.475 *B3*	8.775 *B3*	7.925 *B3*					
	Buffalo, N. Y.	5.425 *R3,B3*	5.425 *R3,B3*	7.35 *B5*	6.475 *B3,R3*	8.775 *B3,B5*	7.925 *B3*	5.10 *B3*		7.20 *B3*		7.65 *W6*
	Claymont, Del.							5.10 *C4*		7.20 *C4*	7.625 *C4*	
	Coatesville, Pa.							5.10 *L4*		7.20 *L4*	7.625 *L4*	
	Conshohocken, Pa.							5.10 *A2*	6.175 *A2*	7.20 *A2*	7.625 *A2*	
	Harrisburg, Pa.							5.10 *P2*	6.275 *P2*			
	Milton, Pa.	5.575 *M7*	5.575 *M7*									
	Hartford, Conn.			7.80 *R3*		9.075 *R3*	7.925 *B3*					
	Johnstown, Pa.	5.425 *B3*	5.425 *B3*		6.475 *B3*			5.10 *B3*		7.20 *B3*	7.625 *B3*	7.65 *B3*
	Fairless, Pa.	5.575 *U1*	5.575 *U1*		6.625 *U1*							
	Newark, N. J. Camden, N. J.			7.75 *W10* 7.75 *P10*		8.95 *W10* 8.95 *P10*						
	Bridgeport, Conn. Putnam, Conn. Willimantic, Conn.			7.85 *W10* 7.80 *J3*	6.55 *N8*	8.925 *N8*						
	Sparrows Pt., Md.		5.425 *B3*					5.10 *B3*		7.20 *B3*	7.625 *B3*	7.75 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			7.85 *B5,C14*		9.075 *A5,B5*						7.95 *A5, W6*
	Spring City, Pa.			7.75 *K4*		8.95 *K4*						
MIDDLE WEST	Alton, Ill.	5.625 *L1*										7.85 *L1*
	Ashland,Newport,Ky.							5.10 *A7,A1*		7.20 *A1*		
	Canton, Massillon, Ohio	5.90* *R3*		7.30 *R3,R2*	6.475 *R3,T5*	8.775 *R3,R2, T5*						
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.425 *U1,R3, W8,N4,P13*	5.425 *U1,R3, N4,P13*	7.30 *A5, W10,W8 B5,L2,N9*	6.475 *U1,R3, W8*	8.775 *A5, W10,W8 L2,N8,B5*	7.925 *U1,W8*	5.10 *U1,A1, W8,I3*	6.175 *U1*	7.20 *U1,W8*	7.625 *U1,W8*	7.65 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.425 *R3*	5.425 *R3*	7.30 *A5,C13 C18*		8.775 *A5, C13, C18*	7.925 *R3*	5.20 *R3,J3*	6.175 *J3*		7.625 *R3, J3*	7.65 *A5, C13*
	Detroit, Mich.	5.425 *G3*	5.425 *G3*	7.55 *P1* 7.50 *P8,B5*	6.475 *R5 G3*	8.775 *R5* 8.975 *B5,P3, P8*	7.925 *G3*	5.10*G3*		7.20 *G3*	7.625 *G3*	
	Duluth, Minn.											7.65 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.425 *U1,I3, Y1*	5.425 *U1,I3, Y1*	7.30 *R3,J3*	6.475 *U1,I3, Y1*	8.775 *R3,M4*	7.925 *U1, Y1*	5.10 *U1,I3, Y1*	6.175 *J3,I3*	7.20 *U1,Y1*	7.625 *U1, Y1,I3*	7.75 *M4*
	Granite City, Ill.							5.20 *G2*				
	Kokomo, Ind		5.525 *C9*									7.75 *C9*
	Sterling, Ill.	5.525 *N4*	5.525 *N4*					5.10 *N4*				7.75 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.30 *C10*	6.475 *C10,S1*	8.775 *C10*	7.925 *S1*	5.10 *R3,S1*		7.20 *S1*	7.625 *R3, S1*	
	Owensboro, Ky.	5.425 *G5*			6.475 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.425 *U1,J3*	5.425 *U1,J3*	7.30 *A5,B4, R3,J3,C11, W10,S9,C8*	6.475 *U1,J3, C11,B7*	8.775 *A5, W10,R3,S9, C11,C8*	7.925 *U1,J3*	5.10 *U1,J3*	6.175 *U1*	7.20 *U1,J3, B7*	7.625 *U1,J3, B7*	7.65 *A5, J3,P6*
	Portsmouth, Ohio											7.65 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.10 *W5*				
	Youngstown, Ohio	5.425 *U1,R3, Y1*	5.425 *U1,R3, Y1*	7.30 *A5,Y1, F2*	6.475 *U1,Y1*	8.775 *Y1,F2*	7.925 *U1,Y1*	5.10 *U1,R3, Y1*		7.20 *Y1*	7.625 *U1, R3,Y1*	7.65 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.175 *J5* 6.125 *K1*	6.175 *J5* 6.125 *K1*		7.525 *K1*		8.625 *K1*	5.90 *K1*		8.00 *K1*	8.425 *K1*	
	Geneva, Utah							5.10 *C7*			7.625 *C7*	
	Kansas City, Mo.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*					7.90 *S2*
	Los Angeles, Torrance, Cal.	6.125 *C7,B2*	6.125 *C7,B2*	8.75 *R3,P14*	7.525 *B2*	10.75 *P14*	8.625 *B2*					8.60 *B2*
	Minnequa, Colo.	5.875 *C6*	5.875 *C6*					5.95 *C6*				7.90 *C6*
	Portland, Ore.	6.175 *O2*	6.175 *O2*									
	San Francisco, Niles, Pittsburg, Cal	6.125 *C7* 6.175 *B2*	6.125 *C7* 6.175 *B2*				8.675 *B2*					8.60 *C7,C6*
	Seattle Wash.	6.175 *B2,N6*	6.175 *B2*				8.675 *B2*	6.00 *B2*		8.18 *B2*	8.525 *B2*	
SOUTH	Atlanta, Ga.	5.625 *A8*	5.425 *A8*									7.65 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.425 *T2,R3, C16*	5.425 *T2,R3, C16*	7.90 *C16*			7.925 *T2*	5.10 *T2,R3*			7.625 *T2*	7.65 *T2,R3*
	Houston, Ft. Worth, Lone Star, Tex.	5.675 *S2*	5.675 *S2*		6.725 *S2*		8.175 *S2*	5.20 *S2* 5.20 *L3*		7.30 *S2*	7.725 *S2*	7.90 *S2*

* Special Quality (Effective June 27, 1958) † Merchant Quality—Special Quality 35¢ higher.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace, Inc., Chester, Pa.
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 J. & L. Steel Co., Stainless Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**	**Blk.**	**Gal.**
Sparrows Pt. *B3*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Youngstown *R3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fontana *K1*	+8.25	+23.5	+5.25	+19.5	+1.75	+15.00	0.75	+14.25	1.25	+13.25	1.75	+12.75	3.25	+13.00								
Pittsburgh *J3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Alton, Ill. *L1*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Sharon *M3*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Fairless *N2*	3.25	+12.0	6.25	+8.0	9.75	+3.50	12.25	+2.75	12.75	+1.75	13.25	+1.25	14.75	+1.50								
Pittsburgh *N1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Wheeling *W5*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Wheatland *W4*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50								
Youngstown *Y1*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
Indiana Harbor *Y1*	4.25	+11.0	7.25	+7.0	10.75	+2.50	13.25	+1.75	13.25	+0.75	14.25	+0.25	15.75	+1.00								
Lorain *N2*	5.25	+10.0	8.25	+6.0	11.75	+1.50	14.25	+0.75	14.75	0.25	15.25	0.75	16.75	0.50	*9.25	+24.25	*2.75	+19.50	*0.25	+17.0	1.25	+15.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Youngstown *R3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Fairless *N2*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Fontana *K1*	+3.75		0.25		3.25		3.75		4.25		4.75		5.25									
Pittsburgh *J3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Alton, Ill. *L1*	7.75	+6.0	11.75	+2.0	14.75	2.50	15.25	1.25	15.75	2.25	16.25	2.75	16.75	1.50								
Sharon *M3*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Pittsburgh *N1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Wheeling *W5*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Wheatland *W4*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50								
Youngstown *Y1*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50
Indiana Harbor *Y1*	8.75	+5.0	12.75	+1.0	15.75	3.50	16.25	2.25	16.75	3.25	17.25	3.75	17.75	2.50								
Lorain *N2*	9.75	+4.0	13.75	list	16.75	4.50	17.25	3.25	17.75	4.25	18.25	4.75	18.75	3.50	*7.75	+21.75	*0.25	+16.0	2.25	+13.50	7.25	+8.50

Threads only, buttweld and seamless 2½ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective June 27, 1958)

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, west of Miss. River	9.5¢
Domestic sponge iron, 98+% Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	10.5¢
Atomized iron powder, 98% + Fe, 40 mesh,, F.O.B. Easton, Pa., in 100 lb bags	7.7¢
Atomized iron powder, 98% + Fe, F.O.B. Easton, Pa., in 100 lb. bags. Freight allowed east of Miss. River	10.5¢
Atomized iron powder, 98% + Fe. Cutting and scarfing grade, F.O.B. Easton, Pa.	8.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	27.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe	88.0¢ to $2.85
Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	31.1¢ to 47.1¢
Copper, electrolytic	41.50¢
Copper, reduced	40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe, 03 max. Del'd	$5.00
Lead, f.o.b. Hammond, Ind.	19¢
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	$3.60 to $3.95
Nickel, chemically precipitated	$1.05
Nickel, unannealed	$1.00
Nickel, annealed	$1.06
Nickel, spherical, unannealed #80	$1.13
Silicon	43.50¢
Solder powder	13¢ plus met. value
Stainless steel, 302	$1.02
Stainless steel, 316	$1.30
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh)	$3.15 (nominal)
Zinc, 5000 lb & over	17.5¢ to 30.7¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts	Full Container Price	30 Containers	20,000 Lb.	40,000 Lb.
	Pct. Discounts			
½" and smaller x 6" and shorter	49	54	56	57
⅝" thru 1" x longer than 6"	35	40	43	45
Rolled thread carriage bolts ½" & smaller x 6" and shorter	49	54	56	57
Lag, all diam. x 6" & shorter	49	54	56	57
Lag, all diam. longer than 6 in.	39	44½	47	48½
Plow bolts, ½" and smaller x 6" and shorter	49	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	60½
⅞ in. to 1 in. inclusive	55½
1⅛ in. to 1½ in. inclusive	58½
1⅝ in. and larger	53½
C. P. Hex, reg. & hvy.	
¾ in. and smaller	60½
⅞ in. to 1¼ in. inclusive	55½
1⅜ in. and larger	53½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	46½
Semi-finished Hex Nuts	
⅝ in. or smaller	60½
⅞ in. to 1½ in. inclusive	55½
1⅝ in. and larger	53½
(Add 25 pct for broken case or keg quantities)	
Finished	
⅞ in. and smaller	63
Rivets	
	Base per 100 lb
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws *Discount (Packages)*

	Full Finished H. C. Heat Treat	
New std. hex head, packaged		
⅝" diam. and smaller x 6" and shorter	40	26
¾", ⅞", and 1" diam. x 6" and shorter	22	3
⅝" diam. and smaller x longer than 6"	8	+13
¾", ⅞", and 1" diam. x longer than 6"	+ 6	+32

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	58	49
¾" through 1" dia. x 6" and shorter	45	33

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 1/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

	Quantity	Discount Mach. Screws	Stove Bolts
Plain Finish Cartons		60	60
Bulk			
To ¼" diam. incl.	25,000-and over	60	..
5/16 to ½" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Quantity	Discount Hex	Square
In Cartons		16	19
In Bulk			
⅝" diam. & smaller	25,000 and over	14	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	40.00
Electrodeposited	31.25
Brass, 80-20, ball anodes, 2000 lb or more	44.00
Zinc, ball anodes, 2000 lb lots	16.00
(for elliptical add 1¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes $1.13 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	68.70
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	40.50
Nickel chloride, freight allowed, 300 lb	48.50
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.05
(Philadelphia price 24.50)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	48.00
Chromic acid, flake type, 10,000 lb or more	31.00

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 6 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

WAREHOUSES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structures	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68	.....	.....	.....	.....
Baltimore	$.10	8.10	9.00	9.78	8.80	8.76	8.60	8.75	10.69*	16.28	15.28	19.83	19.08
Birmingham	.15	8.18	9.45	10.15	8.23	8.56	8.64	8.60	10.57	.....	.....	.....	.....
Boston	.10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.00	16.38	15.38	19.93	19.18
Buffalo	.15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.15*	16.34	15.15	19.01	18.95
Chicago	.15	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60
Cincinnati	.15	8.49	9.65	10.25	8.69	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91
Cleveland	.15	8.33	9.60	10 35	8.48	8.94	9.16	8.84	10.95*	15.89	14.89	19.29	18.69
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit	.15	8.58	9.85	10.60	8.73	9.06	9.33	9.05	9.30	15.46	15.06	18.81	18.86
Houston		7.10	8.05	.....	7.25	8.05	7.25	7.20	11.10	16.20	15.25	19.65	18.95
Kansas City	.20	9.02	10.27	10 82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles		9.70**	9.50	12.10	8.90	8.85	8.70	8.75	12.10*	17.05	16.10	21.05	20.35
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12 11*	.....	.....	.....	.....
Milwaukee	.15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.93	14.93	19.48	18.73
New York	.10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	12.86*	16.19	15.19	19.74	18.99
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	8.10	9.00	10.02	8.79	8.87	8.60	8.75	11.61*	16.11	15.11	19.66	18.91
Pittsburgh	.15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95*	15.80	14.80	19.35	18.60
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	10.10[5]	11.10[6]	9.85[7]	11.34*	18.50	17.45	20.75	20.25
San Francisco	.10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20	.....	17.35	21.55	21.05
St. Louis	.15	8.69	9.94	10.61	8.74	9.08	9.25	9.12	9.56	16.16	15.16	19.71	18.96
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81	.....	15.41	.....	19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] ¼" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective June 27, 1958)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.795	T-1
18	4	1	—	5	2.50	T-4
18	4	2	—	—	1.96	T-2
1.5	4	1.5	8	—	1.155	M-1
6	4	3	6	—	1.345	M-3
6	4	2	5	—	1.30	M-2
High-carbon chromium					.925	D-3, D-5
Oil hardened manganese					.475	O-2
Special carbon					.56	W-1
Extra carbon					.36	W-1
Regular carbon					.305	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*A3, J2, L4, C4*) 10 pct	Plate (*A3, J2, L4, C4*) 15 pct	Plate (*A3, J2, L4, C4*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	37.95	42.25	46.70	49.00
	316	44.40	49.50	54.50	58.75
	321	40.05	44.60	49.30	47.25
	347	42.40	47.55	52.80	57.00
	405	29.85	33.35	36.85	.....
	410	29.55	33.10	36.70	.....
	430	29.80	33.55	37.25	.....

CR Strip (*S9*) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	S. 525	6. 50	6.975	.....	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	.....	14.75
So. Chicago *R3*	.....	.....	.....	9.75	.....	.....	.....
Ensley *T2*	S. 525	6. 50	.....	.....	.....	.....	.....
Fairfield *T2*	.....	6.50	.....	9.75	.....	6.60	.....
Gary *U1*	S. 525	.....	.....	.....	.....	6.60	.....
Huntington *C16*	.....	6.50	.....	.....	.....	.....	.....
Ind. Harbor *I3*	S. 525	.....	6.975	9.75	.....	6.60	.....
Ind. Harbor *Y1*	.....	.....	.....	9.75	.....	.....	.....
Johnstown *B3*	.....	6.50	.....	.....	.....	.....	.....
Joliet *U1*	.....	.....	6.975	.....	.....	.....	.....
Kansas City *S2*	.....	.....	.....	9.75	.....	.....	14.75
Lackawanna *B3*	S. 525	6. 50	6.975	.....	.....	6.60	.....
Lebanon *B3*	.....	.....	6.975	.....	14.50	.....	14.75
Minnequa *C6*	S. 525	7.00	6.975	9.75	.....	6.60	14.75
Pittsburgh *P5*	.....	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	9.75	.....	.....	.....
Seattle *B2*	.....	.....	.....	10.25	.....	6.75	15.75
Steelton *B3*	S. 525	.....	6.975	.....	.....	6.60	.....
Struthers *Y1*	.....	.....	.....	9.75	.....	.....	.....
Torrance *C7*	.....	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.50	.....	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	9.75	.....	.....	.....

COKE

Furnace, beehive (f.o.b.) Connellsville, Pa. ..... Net-Ton $15.00 to $15.75

Foundry, beehive (f.o.b.) $17.50 to $19.00

Foundry oven coke

Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.625	.....
Armature	11.10	10.85	11.35
Elect.	11.80	11.55	12.05
Special Motor	.....	12.10	.....
Motor	12.90	12.65	13.15
Dynamo	13.95	13.70	14.20
Trans. 72	15.00	14.75	15.25
Trans. 65	15.55	.....	.....
		Grain Oriented	
Trans. 58	16.05	Trans. 66	20 20
Trans. 52	17.10	Trans. 80	19.20
		Trans. 73	19.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*) $2 a ton higher; Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville. Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	GRAPHITE Length (In.)	GRAPHITE Price	CARBON* Diam. (In.)	CARBON* Length (In.)	CARBON* Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5.00)	$135.00
No. 1 Ohio	120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill.	120.00
No. 2 Ohio	103.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $2.00)	21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$150.00
Childs, Hays, Pa.	155.00
Chicago District	160.00
Western Utah	175.00
California	180.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	157.00-160.00
Silica cement, net ton, bulk, Latrobe	28.50
Silica cement, net ton, bulk, Chicago	25.50
Silica cement, net ton, bulk, Ensley, Ala.	26.50
Silica cement, net ton, bulk, Mt. Union	24.50
Silica cement, net ton, bulk, Utah and Calif.	37.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$105.00
Standard chemically bonded, Curtiner, Calif.	115.00
Burned, Balt.	99.00

Magnesite Brick

Standard Baltimore	$131.00
Chemically bonded, Baltimore	116.00

Grain Magnesite

St. ⅝ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in: Pa., W. Va., Ohio	$16.75
Midwest	17.00
Missouri Valley	15.00

(Effective June 27, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	.....	212	193	8.65	9.20
Aliquippa *J3***	173	190	.....	.....	190	8.65	9.325
Atlanta *A8***	175	192	.....	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	8.75	9.425**
Buffalo *W6*	.....	.....	.....	.....	.....	8.65	8.95*
Chicago *N4*****	173	190	172	212	196	8.65	9.325
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	8.65	.....
Crawf'dav. *M4***	175	192	.....	214	198	8.75	9.425
Donora, Pa. *A5*	173	187	.....	212	193	8.65	9.20
Duluth *A5*	173	187	.....	212	193	8.65	9.20
Fairfield, Ala. *T2*	173	187	.....	212	193	8.65	9.20
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	.....	217	198	8.90	9.45
Jacksonville *M4*	184-1	197	.....	219	203	9.00	9.675
Johnstown *B3***	173	190	172	.....	196***	8.65	9.325**
Joliet, Ill. *A5*	173	187	.....	212	193	8.65	9.20
Kokomo *C9**	175	189	.....	214	195*	8.75	9.30*
L. Angeles *B2*****	.....	.....	.....	.....	.....	9.60	10.275
Kansas City *S2**	178	192	.....	217	198*	8.90	9.45*
Minnequa *C6*†	178	192	177	217	198†	8.90	9.45†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.20
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	8.95	9.50*
Pittsburg, Cal. *C7*	192	210	.....	.....	213	9.60	10.15
Rankin, Pa. *A5*	173	187	.....	.....	193	8.65	9.20
So. Chicago *R3*	173	187	.....	.....	193	8.65	9.20
S. San Fran. *C6*†	.....	.....	.....	236	.....	9.60	10.15†
Sparrows Pt. *B3***	175	.....	.....	214	198	8.75	9.425
Sterling, Ill. *N4*****	175	192	172	214	198	8.75	9.425
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.30
Worcester *A5*	179	.....	.....	.....	.....	8.95	9.50
Williamaport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢.
** 11-12¢ zinc.
*** .10¢ zinc.
† Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *J3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C7*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *J3*	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
National Tube	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
Pittsburgh Steel	2	13	36.34	42.56	.....
	2½	12	48.94	57.31	.....
	3	12	56.51	66.18	.....
	3½	11	65.97	77.25	.....
	4	10	87.61	102.59	.....

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S1*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	74.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, 32 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50 52.75	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2,* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9,* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3,* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *J3;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (.25¢ per lb higher); New Bedford, Mass., *R6;* Gary, *U1* (.25¢ per lb higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1,* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5,* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owenboro, Ky., *G5;* Bridgeport, Conn., *N8.*

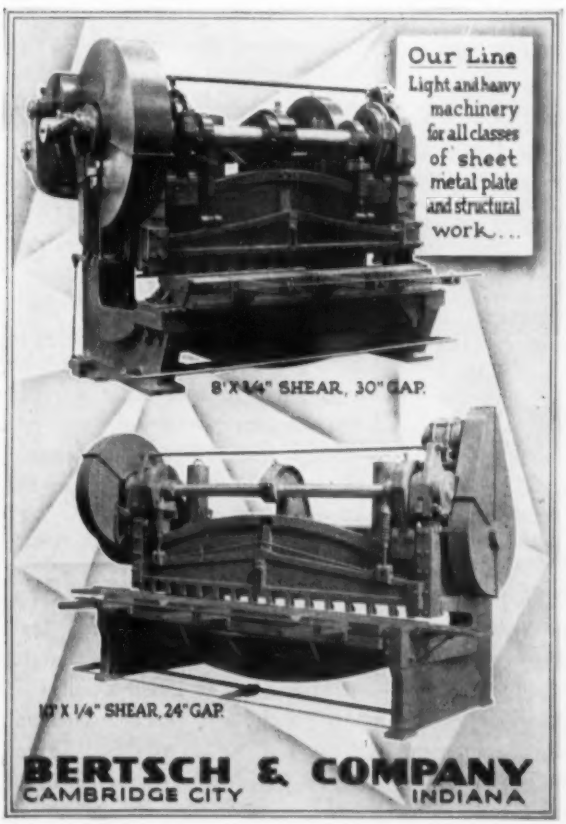
Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown; *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R5;* Watervliet, *A3;* Pittsburgh, Chicago, *U1* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective June 27, 1958)


Our Line
Light and heavy machinery for all classes of sheet metal plate and structural work...
8' X 1/4" SHEAR, 30" GAP.
10' X 1/4" SHEAR, 24" GAP.
BERTSCH & COMPANY
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Qu.	H.P.	Make	Type	Volts	Speed
2	1750	G.E.	M-579BS	4800	1800
1	1500	G.E.	MT	6600	1187
1	1100	F.M.	OVZK, B.B.	4800	1800
1	800	G.E.	MT	2300	293
1	700	A.C.		2300	500
1	500	Whse.	CW	550	350
1	400	Whse.	CW	440	514
1	350	Cr.Wh.	Size 71	208/416	1765
1	350	G.E.	IM-17A	440/2200	720
1	350	G.E.	MT-424Y	4000	257
1	250	Cr.Wh.	Size 290	2300	350
1	250	Al.Ch.		550	600
1	200	G.E.	IM13 B-M	220/440	1760
1	200	Cr.Wh.	26QB	440	505
1	200	G.E.	IM	440	435
3	200	G.E.	I-17AM	2200	435
1	200	G.E.	IM	2200	580
1	150 (unused)	Whse.	CW	2300	435
1	125	A.C.		440	865
1	125	Al.Ch.		440	720
1	100	G.E.	IM-19	2200	435
1	100	G.E.	IM	440	690
4	100	A.C.	ANY	440	695

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1	800	G.E.	KT-573	2200	1180
1	650	G.E.	FT-559BY	440	3570
3	500	Whse.	CS-1216	2000	500
2	450	Whse.	CS-1428	2300/4150	354
1	400	G.E.	IE	2200	580
1	300	Elliott	SC-BB DP	440	1770
1	300	G.E.	KT559A	2300	1775
1	200	G.E.	IK 17	440	580
2	200	G.E.	KT-557	440	1800
1	150/75	G.E.	IK	440	900/450
1	150	Whse.	CS856S	440	880
1	150	Whse.	CS	440	580

SYNCHRONOUS

Qu.	H.P.	Make	Type	Volts	RPM
1	7000	G.E.	ATI	2200/6600	600
1	4350	C.W.	2561SL	4000/6900/13800	514
1	3500	G.E.	TS	4600/2300	360
1	2850	Whse.	Sp.f	2300/4600	514
1	2800	Whse.	Sp.f	2300	720
1	2000	Whse.		2200	702
2	1750	G.E.	ATI	2300	3600
1	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	128.5
1	325	G.E.	ATI	440	1800
1	225	G.E.	ATI	440	1800
1	100	G.E.	TS8-7556	220/440	900

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Buyers Are Reluctant in New York Market

Used machinery sales there are at fair levels, but the market remains erratic.

Late-model equipment gets most of the interest.

▪ Spotty is the word for the used and rebuilt machinery business in the New York area. Overall, sales in May were at a respectable level, but the market was erratic, with little uniformity.

Generally, customers are buying when, and only when, they have orders in the shop to justify the new machines. And metalworking contract volume in the area is low. Construction remains a standout, and demand for ironworkers, press brakes, and shears is good.

Mainly Late Models — When customers do show up, they want late-model, high-production equipment. Strongest demand continues to be for larger capacity machines, with little interest in lightweight tools. The principal exception to this continues to be cranes, with lighter models in good demand by construction fabricating shops.

Prices are off, as much as 50 pct from recent peaks. A Monarch lathe that has commanded $5750 now brings perhaps $2500-$3000. Customers are willing, however, to pay the high side of the range for well reconditioned items. Price firming recently reported in other sections of the country has as yet had little effect in the New York area.

Holding Action — A leading supplier of electrical equipment says that his business is slow now, after a mid-May spurt. Some of this is due to plant vacation closings, but much stems from a reluctance by customers to part with cash. He knows of several cases where engineering departments have forwarded final materials lists to purchasing, only to have them held up at that point. But these customers indicate it is only a matter of time and better business before the orders materialize. In the case of this dealer, pending orders are largely for mill drive motors and control equipment and motor-generator sets. An upturn in the steel ingot rate will boost his order volume sharply.

Waiting for Fall — Growing robustness of the appliance industry is also a good omen for dealers. The New York area is studded with makers of small appliances who buy locally but market nationally. As the overall health of their industry rises, they should be coming into the machinery market for more equipment.

Allowing for the general level of the economy, particularly in hard goods, used machinery volume is holding up well. That it could be considerably better, no one denies. But few see any chance of significant improvement until the expected fall pickup.

Sales Declined in May

Used machinery sales in May dropped 5.2 pct below April levels, according to the monthly index of the Machinery Dealers National Assn. Last month was also 25 pct below the business rate of May, 1957.

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12' x 5/16" Bertsch Initial Type
16' x ⅜" Ransome Pyramid Type
20' x ½" Niles Pyramid Type
BRAKES—PRESS TYPE
500 ton Pacific Hydraulic 10' Bet. Housings
10' x ¼" & 12" x ¼" Hydraulic—NEW
CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton J&H	56' Span 220/3/60
5 ton Shepard Niles	70' Span 230 Volt D.C.
7½ ton Shaw	40' Span 230 Volt D.C.
8 ton P&H	55' Span 220/3/60
10 ton P&H	39' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Shaw	120' Span 230 Volt D.C.
15 ton Northern	54' Span 230 Volt D.C.
15 ton Shepard Niles	56' Span 230 Volt D.C.
120 ton Shepard Niles	77' Span 220/3/60

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#250C Manville SS SD, Capacity ¼"
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44" Newboldt, 9 Rolls 4" dia.
60" Aetna Standard, 17 Rolls 4⅝" dia.
MILLING MACHINE—PLANER TYPE
42" x 42" x 14' Ingersoll 2 Rail & 2 Side Heads
PRESSES—HYDRAULIC
600 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes 36" Stroke, 48 x 45" Bet. Cols.
1000 ton HPM Fastraverse, Bed 48" x 74", 36" Stroke
1500 ton Mesta Steam Hydr. Forging Press
PRESSES—STRAIGHT SIDE
180 ton Hamilton #847, 12" Str. 35½" Bet. Ups.
200 ton Clearing F1200-42, Stroke 30", Bed 44" x 33"
250 ton Bliss SI 7½ Str. Blstr. 33" x 39"
PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C, Arch Jaw, Capy. ⅝" x ⅝"
Cleveland Style EF, Arch Jaw, Capy. 1¼" x 1"
ROLL—CORRUGATING
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#40A Quickwork Whiting, 48" Throat, ½" Capy. —NEW
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10' x ⅜" Niagara
14 x 3/16" Cincinnati #1814
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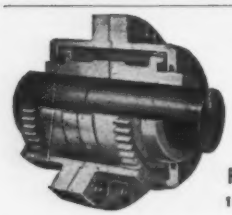

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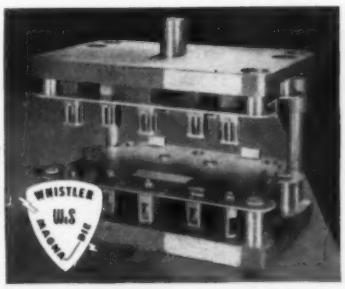

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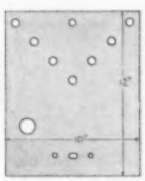

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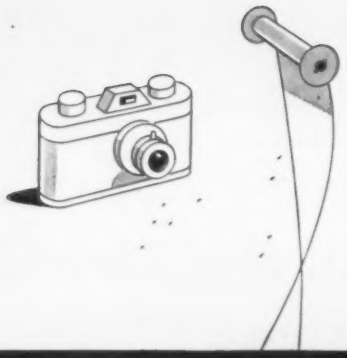

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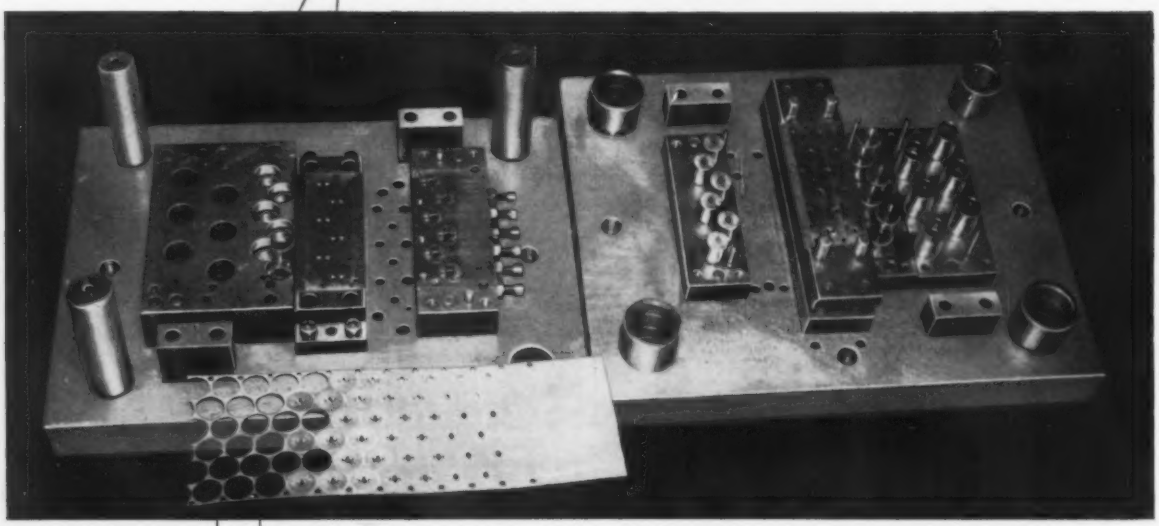

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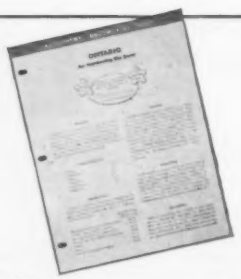

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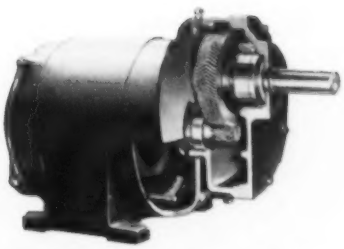

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